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Table of Contents

Vol. 39, No. 10 — July 18, 1940

News Developments

Trends ... 11
Sparks From the News ... 12
Near East Oil Fields May Be Grabbed by Nazis ... *J. P. O'Donnell* 13
Careful Exploration Required in North Dakota Oil Search ... *Frank C. Foley* 14
L. P. St. Clair Elected California Oil Umpire ... 15
War Having Violent Effect on Pennsylvania Grade Region ... *J. P. O'Donnell* 16
Economic Aspects of Water Flooding in Mid-Continent ... *Lynn C. Converse* 18
State Capitals ... 20
Editorial: Drop in the Bucket ... 21
June Completions 2,709; Stage Set for the Big Discovery of Year ... 22
Industry Ready to Give Defense Planners All Possible Aid ... *Henry D. Ralph* 23
Early Returns in Mexican Election Unfavorable to Oil Men ... 24
Deaths ... 24
International ... 26
Refinery Expansion, Natural-Gasoline and Natural-Gas News ... 28
Pipe-Line Activity ... 29
Programs and Meetings ... 31
Runs to Stills Continue to Decline in Mid-Continent Area During July ... 59
Summary of June Drilling Operations ... 93

Engineering—Operating

Solutizer Process for Sweetening Gasolines ... *L. E. Border* 36
Electrifying Oil Properties and Service-Restoration Systems ... *Orville Dowzer* 41
Questions on Technology ... *W. L. Nelson* 49
Analysis of Some Factors Involved in Geochemical Prospecting ... *W. V. Howard* 50
Suggested Field Practices ... *T. P. Sanders* 54
Operating Ideas ... 57
Refiner Makes Display Signs From Scrap Metals ... *W. T. Ziegenhain* 58

Field Operations

Field Operations Summarized ... 63
Illinois ... 64
N. Louisiana, Arkansas *George Weber* 65
Permian Basin, Panhandle ... *R. Marne Sanford* 66
Kansas and Nebraska *Dal Dalrymple* 69
Oklahoma ... *Dal Dalrymple* 73
Louisiana Gulf Coast *Neil Williams* 75
Indiana, Ohio, Kentucky ... 76
Texas Gulf Coast *Neil Williams* 79
Among Drilling Contractors ... 80
Appalachian Fields ... 82
Southwest Texas ... *F. L. Singleton* 83
North Central, East Texas ... *R. Marne Sanford* 85
Michigan ... *Otto C. Pressprich* 87
Rocky Mountain Area ... *T. R. Ingram* 89
California ... *L. P. Stockman* 90
Key to Abbreviations ... 95
Wildcats ... 95
Mississippi ... 98
Canada ... 98

Markets and Prices

Group 3 Market ... *H. Stanley Norman* 102
New York Market ... *J. P. O'Donnell* 103
A.P.I. Refinery Report ... 103
Tank-Wagon Market ... 104
Refinery Prices ... 105
Crude-Oil Prices ... 111

Additional Features

Record of Oil Securities ... 99
Personal Paragraphs ... 100
Equipment News ... 106
Classified Advertising ... 110-111
Advertisers' Index ... 112

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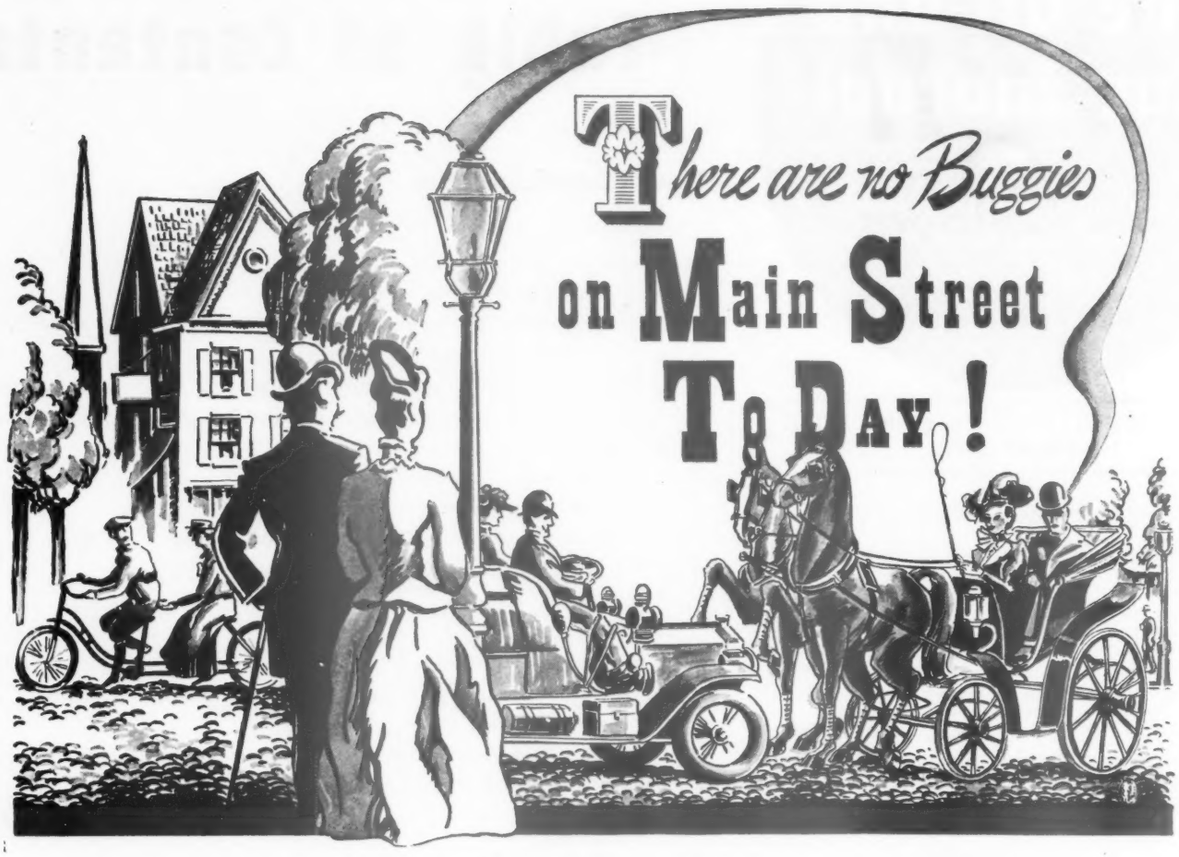

In this country, there's a car for one out of every five people. Yet a little over thirty years ago when you rode in a gasoline buggy you were a rare curiosity. With the automobile, came a new Industry—Natural Gasoline. The first Hanlon plant built in 1908 could produce but six "iron barrels" daily of this new product—today, Hanlon-Buchanan plants with thousands of barrels daily capacity, supply domestic, coastwise and foreign markets annually with millions of gallons uniform high quality Stabilized Natural Gasoline.

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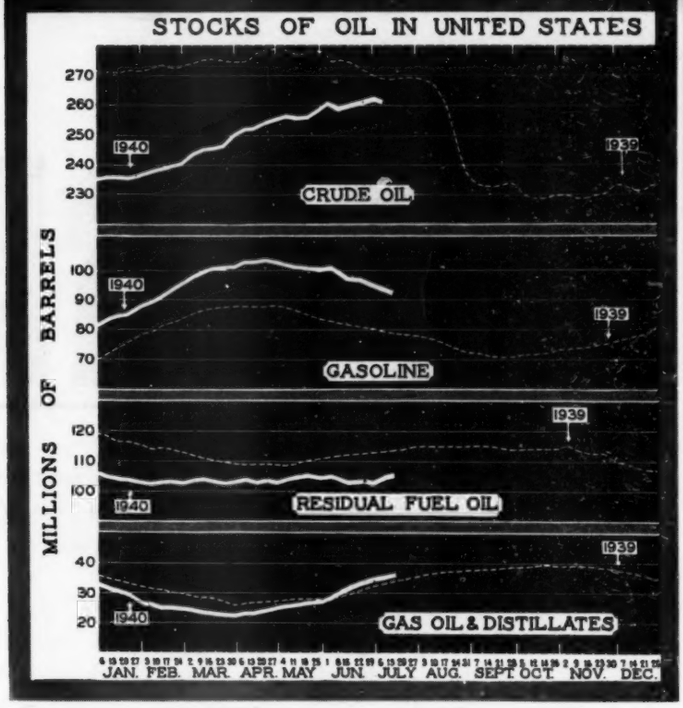
Trends

Changes in Crude Indicate Varying Market Conditions



SCATTERED changes in posted crude schedules of the past week are indicative of varying conditions within the industry. On Tuesday, North Texas' oldest refining organization announced a flat price for crude purchased in that section involving reductions of from 25 to 35 cents per barrel under the gravity scale. The action reflects the operating position of a number of Mid-Continent refiners who distribute their products largely within that area. Net retail gasoline prices at most points in the Southwest have dropped to the lowest levels in years and this has meant correspondingly low prices at refineries, reducing plant revenue to the point where it is claimed that profitable operation is impossible. The flat-price basis announced by this refiner is a further reflection of the low gasoline prices. The price reduction late Tuesday was met by one of the largest crude purchasing companies in North Texas. This company's purchases total approximately 29,000 bbl. daily. The company posted the same price for its 1,000 bbl. daily pipe-line runs in the Mexia pool.

In the East, Pennsylvania Grade producers were given their third 25-cent cut in posted crude schedules. The break in Pennsylvania Grade crude and lubricating-oil prices has been described as a reaction from the sensational advances of last year, a development brought about by an exceptionally strong export and domestic demand for lubricants. Recent war developments have greatly reduced the export demands. As in the past it is expected that the lower prices will serve to reduce the supply of crude, and products.

In Illinois, the largest buyer has announced higher prices for the crude in one of the important producing areas. The production of the Centralia field which was responsible for the recent increases in that state's total output is now definitely decreasing. The activity of crude buyers supports the contention of those who are predicting substantially lower production in that state, the last quarter of the year, unless new fields are discovered in the immediate future. Should the production decrease steadily it is believed there will be additional advances in posted prices. It is pointed out that present crude prices in the basin area because of its transportation advantage are in effect substantially lower than Mid-Continent crude schedules.

War developments which have a bearing on the export demands in this country are marking time. There has been no increase in export orders for Gulf Coast refiners and the position of several of the smaller operators becomes increasingly critical. The market weakness at the Gulf includes fuel oils which earlier in the summer were strong.

CRUDE PRODUCTION *3,563,984 bbl. daily average—down 48,874 bbl. One year ago 3,534,187 bbl.*

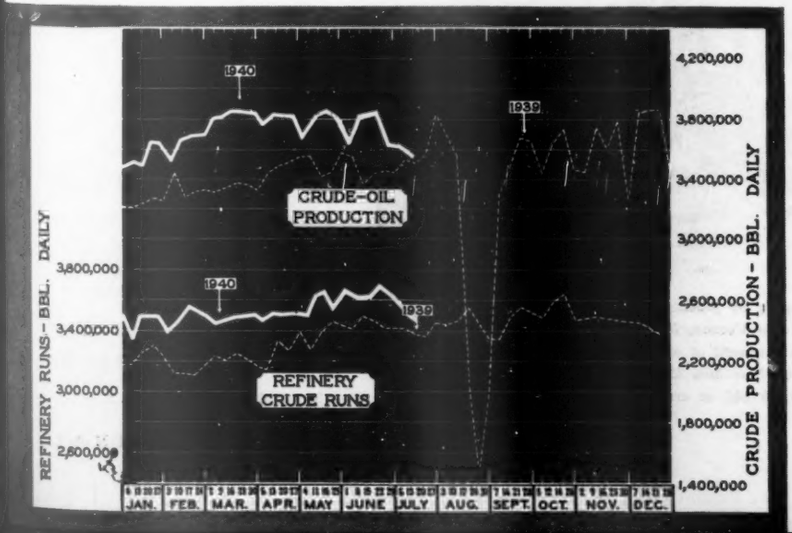
CRUDE STOCKS *261,632,000 bbl. as of July 6—down 427,000 bbl. One year ago 269,348 bbl.*

GASOLINE STOCKS *92,372,000 bbl. as of July 13—down 903,000 bbl. One year ago 79,342,000 bbl.*

RESIDUAL FUEL-OIL STOCKS *105,710,000 bbl. as of July 13—up 367,000 bbl. One year ago 113,745,000 bbl.*

GAS OIL AND DISTILLATES *36,221,000 bbl. as of July 13—up 1,491,000 bbl. One year ago 33,217,000 bbl.*

REFINERY RUNS *3,565,000 bbl. daily week ended July 13—down 10,000 bbl. One year ago 3,390,000 bbl.*



DAILY AVERAGE PRODUCTION FOR WEEK

	July 13, 1940	Bur. Mines July est. of demand	July state allowables	July 6, 1940
Arkansas	72,375	67,400	71,310	71,325
California	623,250	593,900	587,000	631,150
Eastern states	105,750	103,100	.....	106,250
Illinois	486,025	402,300	.....	504,486
Kansas	178,200	159,400	.....	182,450
North Louisiana	65,425	.....	.....	68,385
Louisiana Gulf Coast	216,550	.....	.....	219,547
Louisiana	281,975	278,100	280,731	287,932
Michigan	54,163	61,600	.....	55,913
Mississippi	6,158	9,700	.....	7,082
New Mexico	105,880	106,100	.....	107,340
Oklahoma	411,575	403,900	408,100	418,275
Rocky Mountain states	95,300	103,500	.....	102,320
East Texas	374,746	.....	.....	372,898
West Texas	179,045	.....	.....	177,848
North Central Texa	112,950	.....	.....	114,000
Texas Panhandle	59,348	.....	.....	59,596
East Central Texas	70,496	.....	.....	63,695
Texas Gulf Coast	272,800	.....	.....	273,000
Southwest Texas	73,948	.....	.....	77,298
Texas	1,143,333	1,339,400	1,235,000	1,138,335
United States	3,563,984	3,628,400	.....	3,612,858

SPARKS . . . FROM THE NEWS

TUNE CHANGES: Some of the scoffers who derided the Forest City basin as a possible oil country are singing a different song, now that the third pool in Nebraska has been opened by a big company who had faith in the area.

STRAWS IN THE WIND: The production of the Centralia field in Illinois last week dropped below 100,000 bbl. daily, the state's production is under 500,000 bbl. again and higher posted schedules were announced for the Wabash area effective August 1.

POLITICS: Two of the three members of the Texas Railroad Commission are entering the final stages of the race for governor in the Democratic primary this month. The large number of candidates for the vacancy on the commission indicates that it is attractive politically.

MARKET REFLECTOR: Reflecting the unsatisfactory retail and wholesale markets of the Southwest, a North Texas refiner reduced its posted price for crude. The company established a flat price claiming that gravity scales based on gasoline content are no longer justified.

PAINFUL: It must be painful for refiners to check their record-breaking gasoline gallonage totals at the end of each month against the profit-and-loss ledger.

SCIENTIFIC: The hit-and-miss wildcatters missed in North Dakota. Now exploration is being carried on along scientific lines with all the new geological tools that are available.

CONFIDENCE: The Navy indicated its confidence in the long-range outlook for crude-oil production in the Corpus Christi area by approving the establishment of a 25-million-dollar training base at that point.

TECHNOLOGY: Stratosphere flights crossed the continent both ways last week in less than 16 hours, a tribute to technologists including those who refined the high-octane gasoline and non-sludging lubricants.

BRIGHT SPOT: Following a 33 per cent increase in consumption last year, companies marketing liquefied petroleum gas report their sales so far this year indicate this figure will be equaled or exceeded in 1940.

TRICKY BUSINESS: Pennsylvania Grade producers who took their third 25-cent cut Friday now realize that war export business is tricky and a poor foundation on which to base operations. Several Gulf Coast refiners have learned the same lesson.

WATER TROUBLE: Forty-seven fields in Texas were exempted from the 14 production holidays of July and August by the Railroad Commission on Monday due to adverse effect of the shutdowns on sand conditions and water production. The state's allowable production, however, last Saturday was still some 87,000 bbl. below the Bureau of Mines' figure.

MORE WORK: Kansas operators, knee-deep in a busy midsummer drilling program, added to the general activity by starting some 65 new tests the past week.

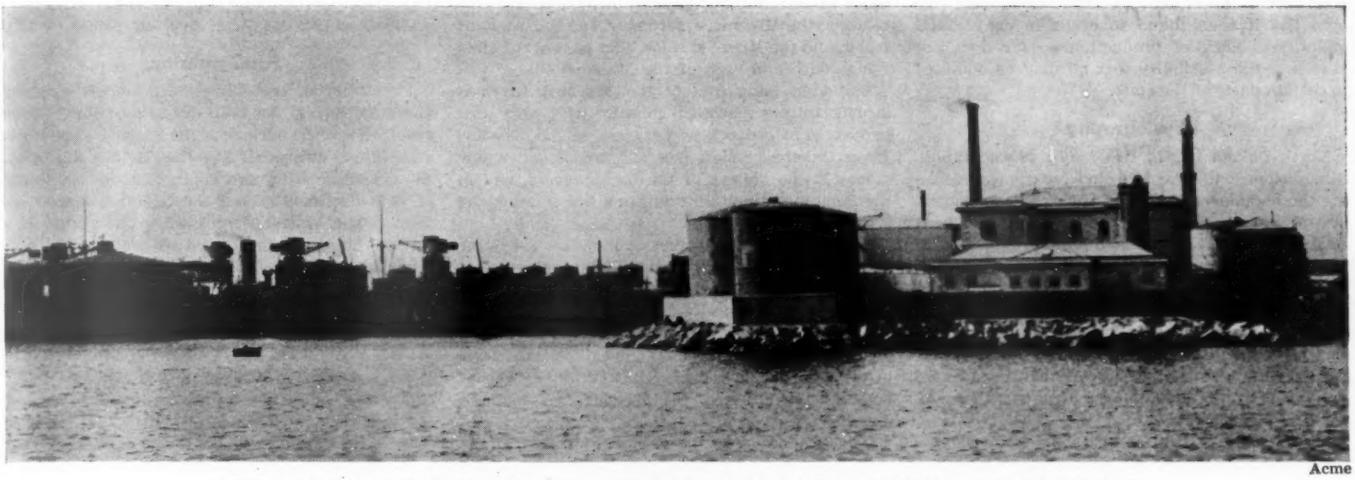
STOPPED: The reductions in national crude production have stopped the upward trend in crude stocks which have increased 25 million barrels since the first of the year.

GOOD START: North Texas with four new fields in as many counties last week following two discoveries in two counties the previous week, is off to a good start for the second half-year.

OIL ON THE OHIO RIVER . . .

Gravel barge converted to oil shipping by placing tanks in it, tied to loading rack of Indian Farm Bureau Refinery at Mount Vernon, Ind. Down the river a short distance, Sohio Corp. has a terminal for the shipment of crude oil; Superior Oil Co. is building a crude terminal, and the Lawrence Pipe Line Co. (Texas Co.) has a blending plant and a terminal. Approximately 15,000 bbl. of crude daily is shipped from this point

Near East Oil Fields May Be Grabbed by Nazis



Acme

Camouflaged oil tanks at Genoa, Italy. This is supposed to make them less distinguishable to raiding British planes

By J. P. O'DONNELL

NEW YORK, July 16.—With the theater of world unrest temporarily transferred to the Near East, an oil prize more than twice as valuable as that obtained by Germany when she gained an alliance with Rumania last week is possibly at stake. This is the proven oil-producing territory of Saudi Arabia, Bahrein Island, Egypt, Iran, Iraq and Kuwait, which have a combined daily average production, under normal operation, of approximately 360,000 bbl. against a Rumanian average last reported at 128,000 bbl. per day and known to have declined since.

The internal situation in Syria is the focus of current interest in the Near East. The country, under French mandate before the outbreak of war, is now divided into two factions, one semi-fascistic with inclinations toward the new Petain government and the other independent minded and supported by Turkey and Iraq working in the interests of United States of the Near East. If the maneuvering between these two factions develops into the proportions of a revolution it may invite the intervention or provide the excuse for the intervention of major powers.

Syria borders Iraq on the west and the international line is less than 200 miles west of the latter's comparatively important Kirkuk field which has a daily average production of approximately 85,000 bbl. Other Near East producing fields are more distant from smoldering Syria but domination of that country by a major power would place it well within easy striking distance of the others. The daily average production of near eastern countries last year is reported approximately as follows:

Country—	Bbl. per day
Iraq	85,500
Iran	220,000
Saudi Arabia	18,000
Egypt	15,000
Bahrein Island	20,000
Kuwait (shutin)	0
Total	358,000

The role of the U.S.S.R. in the Near East situation is also a complicating factor because of the inability to predict in which direction the Soviets will strike next. The installation of a pro-Nazi government in Rumania apparently gives Hitler first call on the oil resources of that country and it is not beyond the realm of possibility that Russia, thwarted there, may be casting covetous eyes on the near eastern fields.

Berlin Claims Reservoirs Full

Berlin issued a statement last week which, if true, confounds those who believe the Nazi war machine is slowing down because of a shortage of oil, and that this is the cause of the delay on the promised blitzkreig on England. In this statement Germany announced that she "does not want any Rumanian oil at present because our reservoir is full."

The oil is apparently there for the taking, however, for with the installation of leaders of the pro-Nazi Iron Guard in positions of command, Rumania is committed to Germany. Substantial evidence of this commitment was forthcoming last week in her publication of a decree limiting the sale or purchase of shares in Rumanian oil companies, ample indication that she intends to virtually nationalize her oil industry and the movement of her gunboats to points where they command numerous tankers lying idle in Rumanian ports.

According to press reports, about 15 tankers are thus rendered useless to Great Britain. If substantiated, this deprivation might be a blow of some consequence to the British for German air attacks have been concentrated on their oil supplies as much as Royal Air Force attacks on German supplies. Germany claimed last week to have destroyed "extensive" oil storage in the British Isles and point to Britain's shrinking tanker tonnage as the beginning of a heavy drain on the latter's oil supply.

Among the steps taken toward the nationalization of the Rumanian industry in addition to prohibiting the transfer of oil-company shares is an order preventing the removal of oil-company records, including development plans and property evaluations, from offices in that country. An ironical feature of this is that all oil development undertaken in Rumania has been at the expense of British, French, Dutch, Belgian and American capital, all of which, except the United States, were or are victims of Nazi aggression. In addition royalty oil paid by these countries' oil interests in Rumania has been exported to Germany. Rumania's nationalization policy also forestalled reported attempts of the British to turn over their holdings to Russia.

British Tankers Seek U. S. Business

Germany's claims of crippling Great Britain's tanker fleet to a critical point were scouted by marine interests here for this fleet was previously large enough to supply both France and England before the former's capitulation. In addition it was reported in American shipping circles last week that two British tankers were seeking American business, a strong indication that Britain is now well supplied with oil. It is unlikely that these tankers would be permitted to seek foreign trade if their use was required by their country.

Among the war developments last week was the removal of French troops from the island of Aruba, Netherland West Indies. Both French and British troops were sent there in May to protect the 285,000-bbl.-per-day capacity refinery of the Lago Oil & Transport Co., Ltd., from possible German attacks. The French troops were removed to the island of Martinique while the British remained.

Careful Exploration Required In North Dakota Oil Search

By FRANK C. FOLEY
State Geologist

IN spite of a number of attempts to find it, North Dakota has never produced any oil. Gas has been found at numerous points, but in only one area has it been found to occur in commercial quantities. Lack of production so far does not eliminate the possibility that oil may be obtained in certain parts of the state.

Physiography

North Dakota lies in two major physiographic subdivisions with the Missouri escarpment forming the boundary. Eastward from the escarpment lies the major Central Lowlands province and westward from it the Great Plains province. The Central Lowlands section is further subdivided. The Red River Valley, the bed of glacial Lake Agassiz, whose western border is formed by the Pembina escarpment, lies in the extreme eastern part of the state. The Drift Prairie lies between the Pembina and Missouri escarpments. A minor subdivision, the Turtle Mountains, is an outlier of the Missouri plateau.

Subdivisions of the Great Plains province include the Coteau du Missouri, which is the area between the Missouri escarpment and the Missouri River, and the Missouri slope, that part of the state lying south and west of the Missouri River.

The area lying east of the Missouri River is largely rolling glaciated country with very few exposures of bedrock except close to the Missouri River, where erosion has exposed it, at a few places in the valleys of the larger rivers, and in the Pembina escarpment within a few miles of the Canadian boundary.

That area south and west of the Missouri River is much cut up by tributaries of that stream and by the Little Missouri River and its tributaries. Exposures are generally rather good, especially in the bad lands of the Little Missouri and in the valleys of other larger streams. Glacial deposits occur in the area but have been removed largely except within a few miles of the Missouri River where uplands are covered.

Glacial deposits in the area eastward from the Missouri River cover bedrock formations so completely that stratigraphic studies are very difficult. Most of the information must be taken from well records except for a very few places.

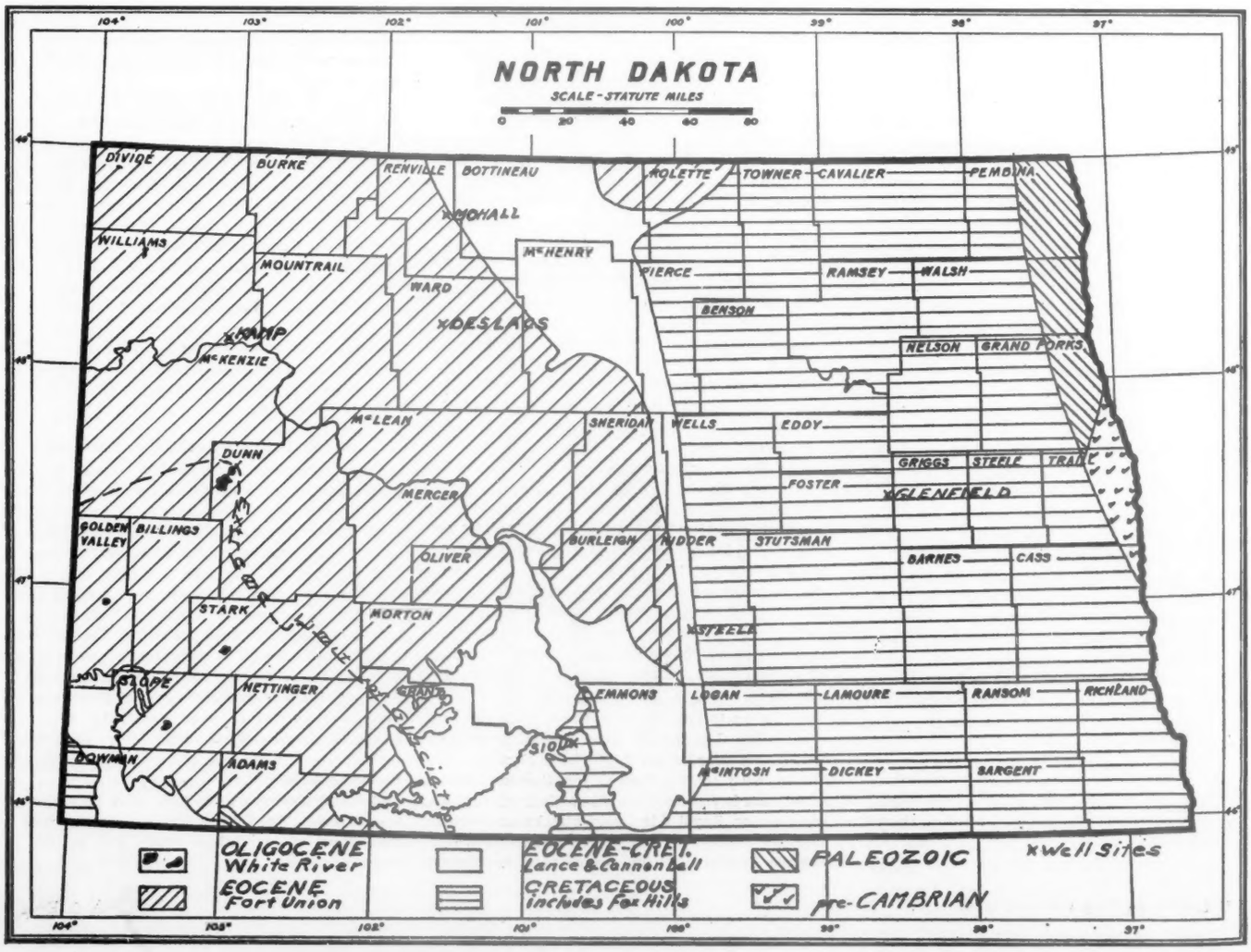
Pre-Cambrian

Pre-Cambrian crystalline rocks underlie the entire state but do not crop out at any place. They lie closest to the surface at the eastern edge of the state where in a small area they lie directly below the glacial deposits at a depth of about 200 to 300 ft. below surface (about 550 to 660 ft. above sea level). The basement rocks drop off rather rapidly to the west to an unknown depth at the western border of the state but probably about 10,000 to 12,000 ft. below sea level.

Paleozoic

Paleozoic formations underlie most of North Dakota except in the southeast corner, where Cretaceous sediments lie directly on pre-Cambrian; they do not crop out at any place. The Paleozoic section increases in thickness from east to west

Generalized geologic map of North Dakota



probably reaching a maximum in the Williston basin of nearly 6,000 ft.

Pre-Cretaceous Mesozoic

Well logs indicate that Mesozoic formations of pre-Cretaceous age may appear in the section about 80 miles west of the eastern border. As in the case of Paleozoic rocks, the section increases in thickness toward the west, reaching a thickness toward the western border of about 1,800 ft. Spearfish, Ellis-Sundance, and Morrison have been identified.

Upper Cretaceous

No lower Cretaceous formations are known in North Dakota, the lowest being the Lakota. The Dakota sandstone, as the term has been used in artesian water work in North Dakota, properly consists of the Lakota, Fuson, and Dakota. It was formerly believed that these formations underlie the entire state except in the northern part of the Red River Valley, but recent data indicate that they are missing in more of the northeastern section of the state and that younger Cretaceous rocks lie directly on early Paleozoic rocks. The Dakota, Fuson, and Lakota form the aquifers of the great artesian area in which about 5,000 flowing wells have been drilled in North Dakota.

Lying conformably above the Dakota is a thick series of shales with some calcareous beds and some lensing sandstone, the Benton, Niobrara, and Pierre formations. The Pierre shale underlies the glacial deposits over most of the eastern half of North Dakota. Benton and Niobrara crop out in the Pembina escarpment below the Pierre. Deposits of bleaching clay occur at the base of the Pierre in that region, and some cement rock was quarried many years ago from the Niobrara.

Above the Pierre shale is the Fox Hills sandstone, which has a maximum thickness of about 180 ft. It crops out in the valley of the Missouri River near the South Dakota border and in the extreme southeast corner of the state.

The boundary between the Mesozoic and Cenozoic has been doubtful for many years. Recently Dorf has placed the Lance in the Upper Cretaceous and the Cannonball marine formation in the Paleocene. (See reference).

All Cretaceous formations in North Dakota except the Lakota, Fuson, and Dakota, which are thought to be fresh water, and the Lance are marine.

Tertiary

Most of western North Dakota is underlain by the Fort Union of Paleocene age. It crops out over large areas and is particularly well exposed in the badlands of the Little Missouri River and in the bluffs of the Missouri River. The Fort Union consists of interbedded sand and clay on the whole poorly consolidated. An estimated 500 billion tons of lignite in North Dakota occur mostly in the Fort Union with some in the Lance. A few small areas of White River rocks of Oligocene age occur in the southwestern section of the state. They contain much high-grade pottery clay and bentonite.

Structure

The major structural feature of North Dakota is the Williston basin that is a continuation into the state from South Dakota of the Lemmon geosyncline. The axis of the structure trends a little west of north. The total thickness of the sedimentary section in the basin is not known, but it is probably about 12,000 to 14,000 ft. In 1937-38 the California Co. put down a deep test well in Section 3-154n-96w, Williams County, to a depth of 10,281 ft., ending in what is probably Devonian. As was mentioned in descriptions above, the sedimentary section thickens rapidly from east to west, reaching a maximum in the Williston basin.

Few definite structures are known in North Dakota. The deep test well of the California Co. was drilled on the Nesson anticline, a subsidiary structure in the major basin. It is probable that other structures occur on the flanks of the Williston basin. Surface study of structure is very difficult in the area, for the Fort Union is very lenticular in character with very low dips. Horizons that can be followed for long distances are difficult to find.

The most prominent structure in the area is Cedar Creek anticline, whose axis strikes northwest-southeast and which lies mostly in Montana, entering North Dakota in the extreme southwest corner. Numerous wells drilled on this anticline have produced gas and two wells on Little Beaver Dome in Montana found oil. Gas is piped from the field to Bismarck, N. D.

Glacial deposits that cover the area east of the Missouri River make examination of surface structure very difficult or impossible.

It is probable that geophysical methods must be used to detect structures in North Dakota though some indications from surface studies may be of value in certain places. Attempts to construct a structural map on the Dakota sandstone have been made, but lack of sufficient data makes results of doubtful accuracy. Exact depths and surface elevations on artesian wells to the Dakota are available in only a few cases; so, though a general picture has been obtained, accurate detail is lacking.

Petroleum Possibilities

Though North Dakota has not produced any oil as yet, there is considerable possibility that careful exploration will reveal structures that may produce. Seismic, magnetometer, and torsion-balance surveys have been conducted in North Dakota and are in progress at present. The sedimentary section contains formations that do produce petroleum in other areas. It is probable that if petroleum is obtained in any quantity it will be found in rocks of pre-Cretaceous age. Cretaceous rocks have been penetrated in many places in the state but have not produced large quantities of oil or gas except on the Cedar Creek anticline. A few Dakota artesian wells have produced small quantities of gas. It was thought formerly that the Dakota sandstone might be a possible producer, but experience has shown that it does not contain commercial quantities. Shows of oil and gas were reported from the Des Lacs test well in Section 4-155n-85w, Ward County, from Cretaceous rocks.

Well Logs

Greatly condensed logs of a few deep-test wells are given below:

Des Lacs Western Oil Co., No. 1 Blum, Section 4-155n-85w, Ward County

Pleistocene	0-60
Fort Union	60-920
Lance	920-1300
Fox Hills	1300-1340
Pierre	1340-2820
Niobrara	2820-3400
Benton	3400-3909
Dakota	3909-3980

Glenfield Well, Section 8-146n-82w, Foster County

Pliestocene	0-187
Pierre	187-880
Niobrara	880-1080
Benton	1080-1530
Dakota, Fuson, Lakota	1530-1750
Devonian	1750-1920
Silurian	1920-2210
Ordovician	2210-2980
Cambrian (?)	2980-3150
Pre-Cambrian	3150-3240

Prairie Oil & Gas Co. Well Near Steele, Section 2-140n-73w, Kidder County

Pleistocene	0-56
Pierre	56-1790
Niobrara	1790-1870
Benton	1870-2345
Dakota, Fuson, Lakota	2345-2535
Devonian	2535-2989
Silurian	2989-3140
Ordovician	3140-3819
Cambrian (?)	3819-3884

A. R. Jones Oil & Operating Co., No. 1 Gehringer, Near Mohall, Section 17-161n-84w, Renville County

Pleistocene	0-65
Fort Union	65-272
Lance	272-490
Fox Hills	490-600
Pierre	600-2420
Niobrara	2420-2600
Benton	2600-3200
Dakota, Fuson, Lakota	3200-3340
Jurassic	3340-3737
Devonian (?)	3737-3872

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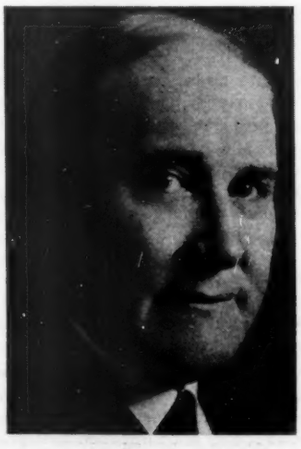
St. Clair Elected New California Oil Umpire

THE Central Committee of California Oil Producers official curtailment group Tuesday elected L. P. St. Clair as California oil umpire, suceeding Lawrence Vander Leck, who resigned.



L. P. ST. CLAIR

Mr. St. Clair is a pioneer operator in California and widely known and respected throughout the entire industry. In recent years as an executive of the Union Oil Co. he has been a leader in directing West Coast oil operations.

Mr. St. Clair was born at Dutch Flat in Placer County, California, 69 years ago. After serving an apprenticeship with Edison Electric Co. at San Francisco, he returned to Bakersfield and became manager of the Bakersfield Gas & Electric Co. and under his direction the first electrical unit of that plant was planned, developed and completed. He later became a pioneer operator in the Kern River field which was discovered in 1899 and was one of a group which organized the Independent Oil Producers Agency, of which he has been president for more than 33 years. He was elected vice president of Union Oil Co. in 1922 and became executive vice president in 1929. He was elected president in 1930 and became chairman of the board of directors in 1938, in which capacity he retired in 1939.

The committee returned to its former setup and split the offices of umpire and committee chairman. A. H. Bell was elected to the latter office.

War Having Violent Effect on Pennsylvania Grade Region

By J. P. O'DONNELL

Practical cessation of shipments to Europe's warring nations is held responsible for the third 25-cent reduction in Pennsylvania Grade crude in 2 months. This business normally amounts to 25 per cent of region's total.

SECOND 25-cent reduction in the price of Pennsylvania Grade crude within a month, and the third within 2 months, was made effective the 12th of this month. Adverse conditions which caused the first two cuts were blamed for last week's reduction; namely, weakness of the refinery lubricating-oil market due mainly to virtual stoppage of export shipments to Europe's warring nations. As approximately 25 per cent of the region's lubricant output was exported to these countries prior to the outbreak of war, effect of the loss of such a volume of business is readily apparent.

Probably no part of American business has been so violently affected by the European war as the Pennsylvania Grade crude-oil industry. When the war began in September this industry was enjoying its best all-around statistical position in years and was ideally situated to benefit from any increase in demand. This possibility was further enhanced by the fact that prices, despite the favorable statistical position of the industry, were comparatively low though strong. Bright stock, 25 pour, had benefited by half-cent increases in July and August and entered September at 16½ cents. Neutral, 200 viscosity, 25 pour, rose a full cent and a half during August and on the first of September was 18 cents.

From this foundation, prices soared in September, leveled off in October, rose again in November and December and hit their peak in January. By that time the low on bright stock was 32 cents and on 200 neutral, 31 cents. On the high side quotations ranged as high as 34½ cents on zero-pour neutral and 36 cents on 10-pour bright stock. At the same time export prices on bright stock ranged from 39 to 43 cents and on neutral from 37 to 39½ cents.

Typical pumping jack used in Bradford field

In early September a selected Pennsylvania neutral enjoyed a 6½-cent margin over a selected Mid-Continent neutral and at the same time a selected Pennsylvania bright stock held a 3-cent margin over a selected Mid-Continent bright stock. These products are chosen for comparison merely on the basis of prices. It will be noted from the graph (Fig. 1) that the bright-stock margin was widened in late September and early October but returned to a more normal relationship in late October, November, and early December. In mid-December the margin began to widen again and when Pennsylvania bright reached its 32-cent peak, the 3-cent margin in September had widened to 9 cents.

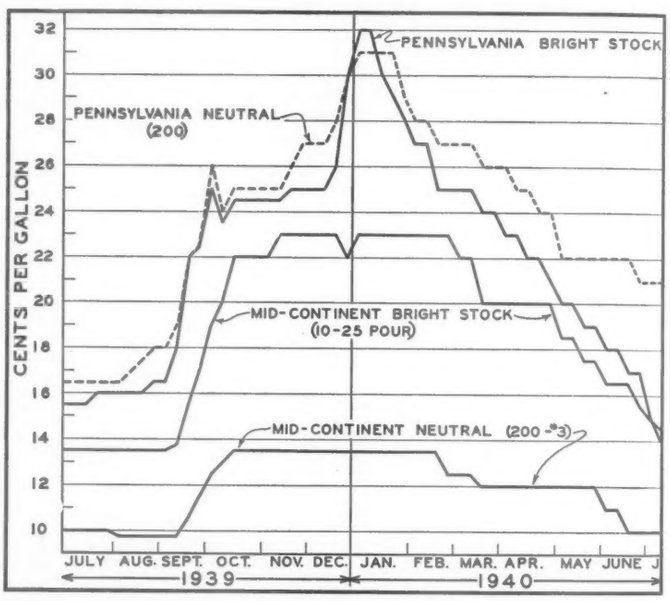


Fig. 1—This graph illustrates when the turning point took place and what has happened since the outbreak of hostilities in Europe

Neutrals Followed Suit

A somewhat similar occurrence took place in neutrals. In early September the selected Pennsylvania neutral held a margin of 8 cents over the selected Mid-Continent neutral. When the Pennsylvania neutral hit its peak of 31 cents in January that margin had increased to 17½ cents. During January evidences of lessening export buying were being felt in the Pennsylvania market and it was believed that these greatly increased margins were driving buyers from the Pennsylvania refineries to another market. This situation was aggravated by a decline in the domestic lubricating-oil demand.

January marked the decisive turning point in the upward trend of the Pennsylvania industry. While refined-oil inventories had begun to increase earlier it was not until then that prices began to decline and shipments were hit sharply. During the first 4 months of the war, indicated shipments of Pennsylvania bright stock averaged 200,000 bbl. per month and neutrals 210,000 bbl. In marked contrast to this are the averages for the first 5 months of this year. Bright-stock shipments were down to a monthly average of 146,000 bbl. and neutral shipments were down to 151,500 bbl. This was a drop of approximately 27 per cent for each product.

The effect on inventories, since production rates were maintained, was marked. A significant feature of the storage situation is that inventories of bright stock increased as late as May whereas in previous years a decline normally began in March and never later than in April. Another possibly significant feature of the inventory gains in the past 6 months is that they were more rapid than in any other similar period in history. Because of the fact that price declines continued in June and early July, it is unlikely that the inventory position has improved.

Bright-stock inventories on May 31 totaled 445,972 bbl. in contrast to a low of 167,784 bbl. on October 31, while neutral inventories at the end of May were 326,384 bbl. against the low of 163,980 bbl. on November 30. In evaluating these changes in stocks, however, it must be taken into consideration that those lows were abnormal, that last October saw bright-stock storage at its lowest point in history and that present inventories of neutral are not greatly above normal.

In view of the rise in inventories of lubricating oils, production has not declined as much as might be expected. Bright-stock production for the region in May was off less than 5 per cent from the average of the last 4 months of 1939 but neu-

tral production did decline about 12 per cent.

At least four of the smaller refineries in the field were forced to shut down as a result of the squeeze between high crude prices and low refined prices. One of these refineries did not operate on crude but specialized in further processing of steam-refined stock. Another shut down temporarily but resumed operations on July 6 or 7. It was reported that this refinery would resume operations only if it could obtain an adequate supply of crude oil at $2 per barrel.

This is indicative of the pressure under which Pennsylvania crude-oil prices are still laboring, despite the fact that they have been reduced 75 cents a barrel in the last 2 months. The price of Bradford crude rose to $2.75 per barrel in January and is now down to $2. With lube prices at their present low levels, the burden of disposing of straightrun gasoline has become proportionately heavier to the numerous small refineries which are not equipped with cracking facilities and this, of course, adds to the pressure on crude prices.

Most recent crude-price cut was effective July 12 when all prices of Pennsylvania Grade crude were reduced 25 cents. This brought the posted price of Bradford crude to $2, Southwest Pennsylvania to $1.65, Eureka crude to $1.59, Buckeye to $1.55 and Group A-E to a spread of $1.88 to $1.93.

Both production and runs to stills of Pennsylvania Grade crude oil have been reduced in recent months, the major portion of the crude reduction having been effected in the Music Mountain pool where producers have voluntarily curtailed production in June and July. June production averaged between 800 and 900 bbl. per day in contrast to as much as 6,000 bbl. per day in earlier months this year. The fact that 100 per cent cooperation has not been obtained jeopardizes this program and its continuance is problematical. During the unsettled period of late 1937 and 1938, some of the wells in this pool were shut in for as long as 14 months.

Effect on Drilling

One certain effect of the reduced crude-oil prices will be a reduction in drilling operations in the Bradford field which supplies about 55 per cent of all Pennsylvania Grade production and which, from a strictly drilling standpoint, is the most active field in the country. In the first half of this year 1,619 wells were completed in the Bradford field, according to the Bradford District Pennsylvania Oil Producers Association, the heaviest drilling campaign since 1937.

Prospects at the first of the year were that a record demand for Pennsylvania oil would be experienced in 1940 and accordingly expanded drilling budgets were adopted by most companies.

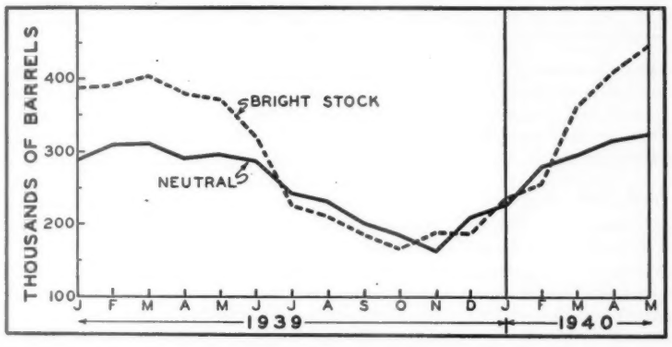


Fig. 2—(Left) Showing effect on inventories, with bright stock far above normal. Fig. 3—(Below) Showing effects of price changes on drilling. (Right) Close-up of well on a lease in Music Mountain pool

BRADFORD FIELD

COMPLETIONS AND PRICES—JUNE 1937 TO JUNE 1940

	Total completions	Average price
1937—		
January-May	1,561	$2.63
June	390	2.79
July	388	2.82
August	411	2.82
September	410	2.60
October	356	2.44
November	341	2.35
December	254	2.20
Total	4,111	$2.60
1938—		
January	256	$2.20
February	242	2.20
March	230	2.08
April	206	2.05
May	203	2.05
June	172	1.90
July	151	1.80
August	148	1.80
September	140	1.68
October	151	1.68
November	140	1.68
December	112	1.68
Total	2,151	$1.90
1939—		
January	134	$1.72
February	122	1.80
March	158	1.98
April	164	2.00
May	199	2.00
June	172	2.00
July	137	2.00
August	176	2.00
September	201	2.00
October	202	2.21
November	227	2.40
December	222	2.50
Total	2,114	$2.06
1940—		
January	227	$2.75
February	258	2.75
March	240	2.75
April	271	2.75
May	308	2.67
June	315	2.39
Total	1,619	$2.66
July 1 to 16, 1940	....	$2.18

The execution of these budgets regarded as the principal reason why drilling has not yet been curtailed since the abandonment of a partially completed program might result in very large ultimate-recovery losses. Fig. 3, showing the effects of price changes on drilling, indicates the probability of an imminent decline, however. The completions include both water intake and oil-producing wells in the approximate ratio of one to one.

Immediate prospects for the Pennsylvania industry are not encouraging. It was brought out at the recent meeting of the Pennsylvania Grade Crude Oil Association that the industry depends on exports for the disposition of about 25 per cent of its lubricating-oil stocks, principally bright and steam-refined stocks. With all of the essential European market shut off with the exception of the British Isles this major outlet is apparently lost for the duration of the war. Other exports, such as to South America, Africa, Australia, etc., remain normal but are of minor consequence. Since domestic lubricating-oil demand normally parallels business conditions, it is evident that a substantial improvement in industrial activity must take place before the domestic demand can be expected to absorb the amount normally going into exports.

Development of additional domestic markets, as pointed out by J. E. Moorhead, executive secretary of the Pennsylvania Grade Crude Oil Association, at its annual meeting last month may solve the problem. Temporary curtailment of the rate of operations is also being suggested as an aid to at least a partial solution. This industry has always been highly sensitive to various factors and is far more susceptible to wide fluctuations than any other part of the oil industry. It is apparently confident that the present situation is only a temporary difficulty and that a return to more normal conditions generally will be accompanied by a return to a better price and statistical position just as it has in the past.

Greater demand incident to the defense program offers the most immediate prospect for new domestic consumption. This demand will be concentrated in areas surrounding Pennsylvania district.

Economic Aspects of Water Flooding in Mid-Continent

By LYNN C. CONVERSE

LYNN C. CONVERSE

The author is qualified by years of experience in water-flooding operations to contribute this discussion. These operations have been chiefly in Rogers County, Oklahoma, and Crawford County, Kansas. In addition to pioneering in corrective shooting and selective plugging, Mr. Converse spent several months in flood-pot studies on velocities, solvent aids and interfacial tensions.

WITH world conditions changing so rapidly from week to week it is futile to speculate on changes in the future market demand for crude petroleum in the United States. Anything could happen. With the possibility of a sudden increase in markets to meet the demands of war, or temporary peace, it is an obligation of the oil industry to analyze its position and be prepared. Texas and a few other states could easily supply their share of an increased demand by changing their proration, but it must be conceded that Oklahoma would find it impossible to meet her share of say a 20 per cent increase in market demand.

While Oklahoma operators have been seeking green pastures in deep and expensive production in other states, they have been overlooking in their own back yard the greatest source of low-cost crude in the United States. This is in the Bartlesville sand (and other sands of the Cherokee shales) at from 1,000 to 3,000 ft. in depth lying under much of eastern Oklahoma and Kansas. Only areas now producing from the Cherokee shale sands are here considered because the sands are known to be uniform in character and the oil consistent in quality. The method of producing this oil cheaply is by water flooding. There are a number of factors, which will be brought out, heretofore unknown or overlooked, which make low-cost recovery of this oil possible. But first let us look at our supply.

There are hundreds of thousands of acres of Cherokee shale sands in the area, of medium thickness and medium saturation, which will ultimately be flooded at a profit. But we are now talking of quick recovery of low-cost oil. This is to be found in the rich pools stringing down through the Golden Lane of Greenwood and Butler counties, Kansas, and taking in parts of Washington, Osage, Tulsa, Payne, and Creek counties in Oklahoma.

Cumulative Production Records

Any old geologist can name, offhand, a dozen pools that have produced 20,000, 30,000, and 40,000 bbl. of high-gravity oil to the acre. Reducing to water-flooding terms the cumulative-production records show that these pools have produced 400 to 500 bbl. of oil per acre-foot from 40 to 80 ft. of saturated sand. From cores taken for residual-oil saturations and comparisons of production with similar areas where the initial saturation was known, it is established that these rich pools had initial saturations of 50 to 80 per cent of the pore space or from 700 to 1,100 bbl. per acre-foot. With the known cumulative production and shrinkage by gas loss deducted from the calculated original saturation, we have a residual saturation of 400 to 600 bbl. per acre-foot. This checks well with the figure obtained by working back from the cumulative production as the percentage of oil probable by production under open-flow conditions. These figures check with rotary-core data where allowance is made for washing and expulsion by gas expansion. Where cable-tool cores have been taken we frequently find much higher actual saturations than these estimated values.

To be very conservative there are in the two-state area at least 20,000 acres of these rich pools that will recover by water flooding 10,000 bbl. per acre or a total, available for low-cost quick production, of 200,000,000 bbl. Incidentally, there is a larger acreage that will recover 5,000 bbl. per acre, adding another 100,000,000 bbl. or more.

Reasons for Low Cost

There are three reasons why the crude produced from this source will be a low-cost oil, viz.: (*a*) Discovery and leasehold cost, (*b*) development cost, and (*c*) lifting cost. Let's analyze them and compare them to the costs of the more glamorous new deep production.

Discovery and leasehold.—These costs have been written off through depletion charges years ago and the leases are mostly carried on the books at the salvage value of the surface equipment and casing. One hundred fifty dollars per acre is a fair average value, but to be conservative we will double the amount and use $300 per acre for our leasehold value. Let's be doubly conservative and say that we will recover only 5,000 bbl. instead of 10,000 bbl. On this basis we have a leasehold cost of 6 cents per barrel which the reader is asked to compare with his own discovery and leasehold costs for new production.

Development cost.—In any production, drilling is the major part of the development cost and obviously the cost worked back to the barrel of oil produced is half as much for double the saturated-sand thickness. But of more importance is the matter of spacing; the per-barrel cost being one-fourth as much for 40-acre spacing as for 10-acre spacing. In considering only these rich producing pools, we have three advantages in development costs, viz.: thick saturated-sand bodies, wide spacing, and most of our wells already drilled. The first and last, of course, are conceded; but in order to prove the wide-spacing statement I will have to go technical for a moment.

The function of water flooding is to displace the free oil in the pore spaces of the sand with water and force the oil both ahead and with the water to the recovery well provided. Spacing is a function of time and time is governed by the ability of the input well to take water and fill up the area of influence between the input and recovery well which we will call "take." The take is controlled by (1) the size of the shot hole, (2) the effective permeability of the sand, (3) the viscosity of the oil, (4) the pressure applied, and (5) resistance (distance between input and recovery wells).

Most Bartlesville sand wells were shot with 1½ to 2 qt. to the foot, which is assumed, with the fractures, to give an effective diameter of 10 ft., so we will use that figure as a constant.

While there are exceptions, it is a general rule that the deeper the Bartlesville sand is found the higher the permeability. In other words, the farther down the shore line of the old Cherokee sea the sands were deposited the more permeable they are. Cores of Cherokee shale sands taken at 2,000 to 3,000 ft. frequently show average permeabilities of from 200 to 300 millidarcys or from four to six times more permeable than the same sand at 500 ft. deep in Nowata and Rogers counties. This means that, all else being equal, the deeper-sand wells will take from four to six times as much water as the wells in the Nowata floods.

Viscosity of the oil is the most important factor affecting take and the least known and understood. Its function is direct; that is, 5-centipoise oil will move through the sand twice as fast as 10 centipoise; or, expressing it the other way, with one-half the effort. It is significant that the 40°-gravity Bartlesville sand oil at the sand temperatures found at 2,000 to 3,000 ft. is between 3 and 4 centipoise, while the best oil and sand temperature at 500 ft. is from 8 to 10 centipoise. Again, all else being equal, the take of the deeper wells will be two to three times as much as at Nowata because of the lower viscosity of the oil.

Surface Pressures

Pressure is also a direct function and is limited by the weight of the overburden. As all floods should be produced by flowing, only surface pressures are considered. While we can safely use 1 lb. of pressure at the surface for each foot of overburden, there is an economic balance between spacing and pressure. We will be conservative and use 1,000 lb. as our surface pressure. This is nearly twice the pressure used in the existing floods, so here again, all else being equal, the deeper wells nearly double their take.

Over 6,000 acres of water floods in the shallow sands (400 to 800 ft.) in eastern Oklahoma and Kansas are putting in less than 5 bbl. of water a day per foot of sand. With few exceptions they are spaced 330 ft. by 330 ft. or 233 ft. from water to oil. This is not the maximum spacing for all of these floods, but it is the economic spacing for the average permeability of the sand and viscosity of the oil found and pressure used at these shallow depths.

Now, for our 2,000 to 3,000-ft. production our take is five times greater for permability, two and one-half times greater for viscosity and two times greater for pressure, making the take 25 times more per foot of sand. Using 5 bbl. per foot per day for the shallow sand we have a take of 125 bbl. per foot per day for the deeper sand.

Referring to Figs. 1 and 2 it will be noted that at a radial advance of 1 in. per hour 125-bbl. capacity per foot of sand per day will fill a circle

660 ft. in radius in approximately 13 months. But as the area of influence between an input well and recovery well is approximately 70 per cent of the area of a circle of the same radius, the time required for the fill-up would be 9.1 months. Allowing for the water to go one and one-half times through after the fill-up the time required to complete the flood on 20-acre spacing would be 22.75 months after water was started in the wells.

Knowing the values of permeability and viscosity, the flood engineer works out his spacing and time from formula and fits in the pressure for greatest economy and shoots or corrects his wells to fit the other factors. Starting with known factors in the shallow fields I have simply shown why the larger takes exist and then how a 125-bbl.-per-day-per-foot take works out in time on a 20-acre pattern. Some conditions in the deeper Bartlesville sand call for 40-acre patterns for best economy, while the known factors in one area call for 160-acre spacing.

Development Cost

Getting back to our development cost, we have seen why wide spacings can be used for reasonable time payouts, but in many fields we find that wells are already in on a much closer density than required. In many places the wells are on fairly uniform pattern so that every other well can be used as a water-input well by correcting it for that purpose before cementing in the pressure tubing string.

No one should be misled into the idea that water can be dumped into every other well and thereby make a water flood with no drilling expense. Several cores will have to be taken for information before the old wells can be corrected. Correction is less expensive than a new well, but as old records are sometimes very incomplete and inaccurate, trial-and-error methods sometimes have to be used and considerable time is lost. In some rich pools the leases are being held with only a few pumping wells, the others having been pulled and plugged. Unless the well has been cemented, all plugged wells have to be cleaned out and replugged with cement if they are not to be used. With core control these wells can be used for either input or recovery wells.

As the spacing requirements are wide and as a large part of the wells required are already drilled the drilling part of the development in this type of production will be very low. In checking development costs on specific leases in different pools it was found when worked back to the barrel basis that the entire development cost including water supply ranged from 3 cents per barrel to 10 cents per barrel.

Lifting cost.—As the energy is provided by the operator at the top of the ground there is no reason water-flood oil should not be flowed. Consequently the lifting cost consists entirely of producing, treating, and pressuring the water. (The operator does the switching.) Worked back on the production a liberal allowance for lifting cost is 10 cents per barrel.

Taken altogether we have: 40-gravity crude on 97 per cent tank tables less royalty and gross production tax, grossing the seven-eighths working interest, $.884.

Leasehold	$.06
Development	.10
Lifting	.10
Engineering and supervision	.07
Overhead	.10
Total cost crude	.43
Net	$.454

This is based on a recovery of only 5,000 bbl. per acre. Larger recoveries, as will be found in most of the pools, will reduce the cost proportionately. Interest and depreciation are not shown as they are more than offset by salvage at the end of the operation.

The question of adequate water supply is often raised for pools away from the larger rivers. The Arbuckle formation lies a few hundred feet below the Bartlesville sand and there are usually one or more off-pattern or edge wells that can be deepened through the Mississippi lime for this dependable supply. The hydrogen sulfide gas content is fugitive and easily dissipated. While the salt content increases with depth, the corrosion expense is offset by the increased production due to the better interfacial tension of the salt water.

As the permeability increases it is more necessary to have untization of the pools or cooperative development. As a forward-looking movement the industry should sponsor legislation covering unitization where a majority of the lease and royalty owners or acreage represented are in agreement.

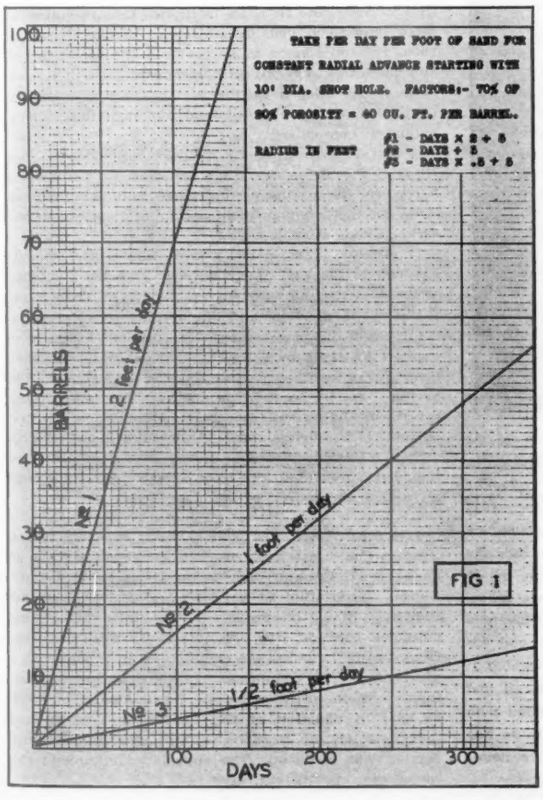
Immediate large-scale withdrawal of this tremendous reserve of low-cost oil is impossible because of the lack of experienced flood engineers to handle the operations. But if Oklahoma is to continue to hold its present percentage of market demand it is high time that the training of flood engineers was started. This can best be done by starting small experimental units, training men by the usual expensive method of trial and error or calling in outside experienced talent to supervise and train new men. It is significant that only one integrated company in the Mid-Continent has been successful in producing competent flood engineers.

There are then millions of barrels of high-quality oil which can be recovered at low cost from the rich pools of the Cherokee shale sands of central eastern Kansas and Oklahoma. Against the time this will be needed for whatever purpose, war demand or to hold a share of markets, we should be proving the value of these reserves by experimental floods and training competent flood engineers.

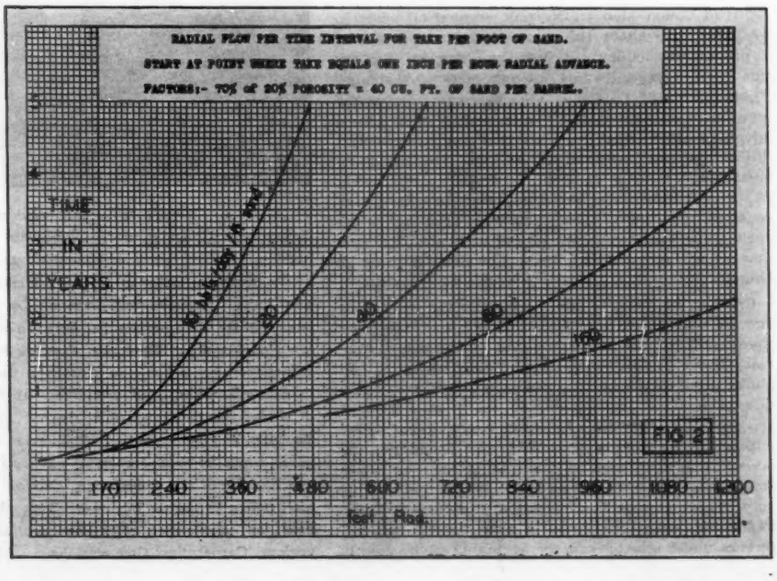
Explanation of Curves

Fig. 1 shows the amount of water per foot of sand per day which can be introduced into a well to maintain a uniform radial advance up to the point of optimum take. It is known that, in the presence of both oil and water in the sand, an initial turbulent flow at the input well will create an emulsion and when carried to excess completely chokes the sand. Turbulent flow varies with the size of interstitial openings. Also tendency to emulsify varies with different types of crude. Advance of 1 in. per hour (2 ft. per day) has been found safe under extreme conditions. A faster radial advance can be used under the more ideal conditions covered in the scope of this article.

Fig. 2 illustrates graphically the radial flow per unit of time for different takes per foot of sand per day, after building up to the take at a uniform advance of 1 in. per hour. "The area of influence" between a water-input well and the four recovery wells in a five-spot pattern represents approximately 70 per cent of the area of a circle of the same radius, consequently the time shown is multiplied by 0.7 to get the time of complete fill-up.


TAKE PER DAY PER FOOT OF SAND FOR CONSTANT RADIAL ADVANCE STARTING WITH 10' DIA. SHOT HOLE. FACTORS:- 70% OF 20% POROSITY = 40 CU. FT. PER BARREL.
RADIUS IN FEET
#1 - DATE X 2 + 5
#2 - DATE ÷ 5
#3 - DATE X .5 + 5
BARRELS
DAYS
No 1
2 feet per day
No 2
1 foot per day
No 3
1/2 foot per day
FIG 1

The chart at left shows the amount of water per foot of sand per day which can be introduced into a well to maintain a uniform radial advance up to the point of optimum take. The chart below illustrates the radial flow per unit of time for different takes per foot of sand per day


RADIAL FLOW PER TIME INTERVAL FOR TAKE PER FOOT OF SAND.
START AT POINT WHERE TAKE EQUALS ONE INCH PER HOUR RADIAL ADVANCE.
FACTORS:- 70% of 20% POROSITY = 40 CU. FT. OF SAND PER BARREL.
TIME IN YEARS
FIG 2

STATE CAPITALS...

LOUISIANA

THE LOUISIANA LEGISLATURE adjourned last week, after acting on several measures affecting the oil industry. The most important bill considered was the oil and gas conservation bill, which passed both houses and when approved by the governor, will become an act. This bill provides for control of gas-condensate production, and enforcement of recycling, when conservation of gas and condensate requires pressure maintenance.

A bill providing for investigation of the Department of Conservation and the Mineral Board was adopted by the senate, but died on the house calendar. Enacted was a bill creating liens on oil, wells, leases and drilling machinery in favor of drillers and persons furnishing supplies for drilling and production of oil, gas or water wells.

Act 93 of 1936 was amended to extend the Mineral Board's authority over leases. A bill was enacted regulating geophysical and geological surveys on state lands, and providing for filing of data with the state Mineral Board. A bill requiring installation of meters on all oil wells in the state died in committee.

The governor is authorized to make Louisiana a party of the Interstate Oil Compact Commission by resolution adopted in both houses. The bill making it a misdemeanor to prospect for minerals on public highways of the state without its consent, or on private property, without consent of the owner, was passed by both houses.

As regards taxes, the bill increasing gasoline tax from 1 to 2 cents per gallon failed passage by dying on the house calendar, but a bill levying a severance tax on distillate, condensate and raising the rates on the tax on oil, was enacted. Also passed by both houses were bills regulating liquefied-petroleum gases, levying a 7-cent per gal. tax on butane and diesel fuel, and levying a tax of ½ cent per 1,000 cu. ft. for gathering and transporting natural gas.

TEXAS

BECAUSE OF WATER AND SAND CONDITIONS, the Railroad Commission on Monday granted oil wells in 47 fields throughout the state exemptions from the 7 production holidays of July and August. Exemption of properties (having an aggregate allowable of 27,733 bbl. daily) producing high percentages of water with their allowable, along with a few which were adversely affected by the shutdowns due to sand conditions, became necessary after the commission increased the number of monthly shutdowns to seven. In preceding months when only one shutdown was required, operators were permitted to either close their wells 1 day monthly or reduce their daily production to the extent of 1 day's allowable. With seven shutdowns monthly, though, this was not possible.

Granting of the exemptions will raise the daily average allowable approximately 5,360 bbl. daily to more than 1,252,141 bbl., based on the commission's summary last Saturday. With exempt wells having a total allowable of 23,733 bbl., they will be permitted to produce a total of 166,131 bbl. on the 7 closing days. Despite the increase by the exemptions, along with gains due to completion of new producers, the allowable still remains within the Bureau of Mines forecast of a market demand of 1,339,400 bbl. during July. The underage has decreased, however, to about 87,000 bbl. daily, compared to over 100,000 bbl. difference under schedules at the beginning of the month.

Restrictions of the flow to about 16,000 bbl. daily under the bureau's forecast was the aim of the commission in the sharp reductions inaugerated in mid-June because production in excess of actual demand was rapidly increasing crude-oil storage. The additional exemptions will bring to almost 40,000 bbl. daily average exempt oil. With exemption of marginal wells and a few other fields because of water conditions and exceptional market demand, the daily average as of Saturday was 33,928 bbl.

The number of fields and amount of production exempted from the shutdowns by the Monday order, by districts, is as follows: In Southwest Texas, 11 fields with total daily allowable of 3,375 bbl.; Gulf Coast. 26 fields and 18,791 bbl.; East Central Texas, 6 fields and 1,378 bbl.; West Central Texas, 4 leases with 168 bbl. allowable; West Texas, 1 well of 25 bbl. allowable.

IN ADDITION TO THIS INCREASE, the commission last Saturday issued an order exempting the Talco and Sulphur Bluff fields of eastern Texas from the July and August shutdowns. Talco was permitted to produced an additional 354,900 bbl. and Sulphur Bluff approximately 63,000 bbl. extra during the months of July and August. Commission engineers explained the additional allowable was granted because the fields produced an asphalt crude which was used mainly in the manufacture of road-building material. Under a previous allowable schedule, Talco field's production averaged 25,350 bbl. daily and Sulphur Bluff's 4,500 bbl.

In May underproduction of the state's allowable amounted to 3.45 per cent, the commission reported. This, however, failed to bring it within the Bureau of Mines estimated market-demand figure. In April, when the allowable was higher, underproduction amounted to 4.7 per cent.

THE RAILROAD COMMISSION has scheduled the state-wide gas-proration hearing for July 18, in order to comply with the statute requiring monthly hearings. Because the present oil-proration order extends through August, the hearing will not deal with oil problems.

WILLIAM J. ARMSTRONG, conservation officer of the Corporation Commission of Oklahoma and Democratic nominee for corporation commissioner, has attended every proration hearing of the commission since 1927 and helped prepare orders made by the commission covering the different fields. Born on a farm near the town of Magnolia, Columbia County, Arkansas, he attended country schools in Arkansas and grade school in Boswell, Okla., and graduated from the University of Oklahoma with an A.B. degree in 1914 and his bachelor of law degree in 1916. Prior to September 1, 1925, when he was employed as head of the oil and gas division of the commission, he was associated with his brother in the oil business. Since that time he has held the position of chief conservation officer under various Corporation Commissions

ARKANSAS

INJUNCTION WAS DENIED the Lion Oil Refining Co. against the Arkansas Oil & Gas Commission order allocating production in the Jones pool, Schuler field, in a reversal last week of an oral opinion handed down by a three-judge court in El Dorado May 9. The oral opinion, concurred in by two of the three judges in May, upheld Lion Oil Refining Co. in its contention that sand thickness should be made a factor in allocating production in the gas-drive field. The commission order was held unconstitutional by the plaintiff, on the basis that oil was migrating from under its Mayfield lease in the center of the field, and that it was being unduly deprived of property, represented by oil reserves in place under the lease. In reversing the oral opinion of May 9, the tribunal last week granted the Oil and Gas Commission a rehearing in the case.

KANSAS

LITIGATION INVOLVING transactions in Russell County over a period of 18 years was terminated last week with a decision by Judge W. A. Huxman of the U. S. Circuit Court of Appeals at Denver, Colo., affirming a decision of District Judge R. J. Hopkins. The decision denied Ben Preston, Wichita, Kans., oil man, title to leases and royalties in Russell County valued at more than $5,000,000. In an action filed in December 1938, Preston sought to be declared the owner of oil and gas leases covering 144 sections of land in Russell County. He alleged the lease requirements were not fulfilled and named 208 defendants, including several major oil companies.

A motion to dismiss the case was upheld by Judge Hopkins on the ground that the cause of action was barred by the statute of limitations and judgment entered for the defendants. In affirming dismissal of the action, Judge Human held:

"Fourteen years have passed since the plaintiff spudded in his well and claims to have been entitled to the possession of these leases. During all these years the plaintiff stood by and did nothing to enforce the claim which he now asserts. The original leases have expired by their own limitations. Other leases have been given to other parties who have developed the premises and brought in production. The only excuse offered by the plaintiff for this inordinate delay is that the acts of the defendants and the bank in refusing to deliver the leases placed in escrow, and pending litigation, have prevented him from carrying out the agreement to drill a well."

THE FEDERAL DISTRICT COURT OF APPEALS at Denver, Colo., last week overruled decision of District Judge R. J. Hopkins. The lower court held that the Kansas Corporation Commission had exceeded its authority in fixing allowables on the Skiles and others' Campbell lease in Rice County, in June 1939. Judge Hopkins ruled against the commission in a bankruptcy proceeding. The commission appealed and also asked that oil produced between June 7 and August 15, 1939, be held in violation of the commission's order and that wells on the lease be shut in until the overproduction was made up. The appeals court upheld the commission in its entirety.

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

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Drop in the Bucket

As details of the enlarged defense program are discussed, many of the pet schemes of the past in regard to furnishing petroleum for military requirements are being revived and some new ones added.

It is advocated that naval oil reserves be developed by the Government as a guarantee of adequate supplies in time of war. Others favor the acquisition by the Government of privately owned producing properties which would be set aside and drawn upon during a crisis.

Still others favor the accumulation of large quantities of crude and products in storage tanks. From Washington last week came the contention that military divisions should build plants to refine aviation fuels.

Usually these suggestions are due to an exaggerated conception of the military's petroleum needs and to a lack of information as to the industry's ability to supply any possible emergency requirements.

Government reports show that gasoline purchases by the Army, Navy and coast guard are less than 5,000 bbl. daily. Fuel-oil consumption by the Navy averages about 30,000 bbl. daily.

The minor importance of these outlets is indicated in the present 1,650,000-bbl. daily production of gasoline at refineries with an additional 145,000 bbl. daily at natural-gasoline plants. The present output of fuel oils, gas oils and distillate is 1,325,000 bbl. daily.

Should the motor-fuel needs of land and air forces increase 10 times and an enlarged Navy require three times more fuel oil, the combined demands would represent a very small part of the total petroleum output.

The public reads of fleets of military tanks and trucks and droves of airplanes and visualizes tremendous quantities of petroleum being consumed daily. It fails to realize that while these military units are numbered by the hundreds and thousands, motor cars, oil heaters and other civilian outlets are counted by the millions.

A tank consuming 5 gal. per mile and a bomber using 40 gal. per hour are impressive as petroleum consumers but collectively their motor-fuel consumption is hardly more than a drop in the bucket when compared with that of 33 million cars, trucks and buses.

Except for isolated defense points there is no justification for a large-scale storage program by the Government. Present inventories of the industry in this country exceed a half-billion barrels scattered throughout the country at more than a thousand refineries, terminals and pipe-line tank farms and stations.

As to plant facilities the Government should leave the manufacture of petroleum products to the owners of 450 operating refineries and 600 natural-gasoline plants.

The manufacturing division backed by one of the largest research and development organizations of any industry is moving faster than ever before in operating efficiency and improving products. The technicians are rapidly perfecting processes for new-product discoveries —the latest being petroleum substitutes for raw rubber.

Particular attention has been given to the production of aviation gasoline, the output of which at this time far exceeds current consumption in this country. Refiners have developed blending materials so that the 100-octane aviation fuel is here. These fuels can be manufactured to meet any possible demand at costs which could not be approached at government plants.

There is no more need for Washington to take over or duplicate any part of the oil industry's operation as a defense measure than there is for it to acquire farms so as to be assured of agricultural products.

The oil business has given this country an abundance of petroleum. All the Government has to do is to indicate the quantity needed and the point of delivery.

June Completions 2,709; Stage Set For the Big Discovery of Year

By W. V. HOWARD

DURING the month of June 2,709 wells were completed, or 41 fewer than during the month of May. As completions are at the rate of 90 per day, this decrease does not represent the normal decrease with an unchanged completion rate. Of the 2,709 completions, 581 were dry holes and 164 were gas wells; the remaining 1,964 were oil wells with a total initial production of 665,936 bbl., or 339 bbl. per well.

A detailed summary of activity in all fields will be found on Pages 93 and 94 of this issue of The Oil and Gas Journal.

Of the more active states, Illinois showed approximately the same number of completed oil wells, 337 as compared with 343, but the large Centralia Devonian producers raised the average initial production from 642 bbl. per well to 789 bbl. At the same time, dry holes in Illinois increased from 58 to 77.

Kansas producers increased from 131 in May to 172 in June and the 287 active drilling wells in the state show that further increases are to be expected. There were 103 oil wells completed in Kansas in June 1939.

Mississippi has, of course, shown the greatest relative growth during the past year. In June 1939, there were two wells drilling in the state and four rigs were up. In May 1940, there were 12 completed oil wells and 18 dry holes, while during June, 8 oil wells and 9 dry holes were drilled. The discovery of the Pickens pool will increase this activity. Mississippi's success has caused an extension of wildcatting into the other southeastern states. At this time last year, there was one drilling test east of the Mississippi-Alabama state line. Last month, there were 15 tests under way.

Activity in Oklahoma is declining as completions dropped 14 in the past month and 39 since June 1939. This trend may be reversed by activity arising from the development of the Cumberland field.

Throughout Texas and the Rocky Mountain district, operators are doing relatively little wildcatting but there is a great number of inside locations to be drilled and both of these areas will see steady activity for many months. Meanwhile, the stage is set for the big discovery of the year with the consequent boom and in spite of unfavorable conditions, dozens of wildcatters from Georgia to California are seeking the trigger which will set off the fireworks.

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Change of Shell's Administrative Offices Causes Many Transfers

In connection with the recent announcement that Shell Oil Co., Inc., administrative offices would be moved to New York in the early fall, the company has announced that the following shifts in personnel would be made.

Alexander Fraser, president, and F. A. C. Guepin, senior vice president, will move to New York. The direction of all marketing activities east of the Rocky Mountains will be located in the New York office, and L. T. Kittinger, the eastern marketing vice president, will be the marketing vice president for the combined territories. R. H. Erichsen, sales manager at present stationed in St. Louis, has been appointed the new general sales manager in New York, and T. R. Kurtz, eastern operations manager, will become the new operations manager in New York for the combined territories. P. E. Lakin, vice president, will move from St. Louis to Chicago and become the resident vice president. The central marketing division, with P. C. Thomas, as manager, will continue to maintain a sizeable staff and headquarters in the Shell Building in St. Louis.

The direction of the company's extensive refined-product transportation system and the coordination of supplies will be centered in the New York office under the direction of N. J. McGaw, vice president. The direction of deep-water transportation will continue in New York under the supervision of R. R. Griffin, vice president. Administration of the company's refineries east of the Rocky Mountains will also be moved to the New York office and continue under the charge of E. D. Cumming, vice president of manufacturing, with C. E. Davis as manager of the department.

The administration of treasury functions east of the Rocky Mountains will be transferred to New York under J. W. Watson as treasurer. C. E. Peet, assistant treasurer in San Francisco, has been appointed the assistant treasurer in New York, and W. A. Baker, comptroller in St. Louis, will become assistant treasurer with headquarters in Houston, Tex.

The direction of all exploration and production activities east of the Rocky Mountains will be moved to Houston, under A. J. Galloway, vice president. The personnel department and those activities that have been associated with it will be administered from New York under H. H. Anderson, vice president. Administration of the company's legal department will be located in New York under C. S. Gentry, who formerly resided in St. Louis. J. T. Dickerson, manager in St. Louis, will head up the legal staff for exploration and production activities in the Houston office. The purchasing activities will continue to be supervised by C. B. Singleton and will be located in New York.

The Shell Pipe Line Corp. will also maintain its head office in Houston, and T. E. Swigart, of Houston, at present vice president of Shell Oil Co., Inc., has been named president of Shell Pipe Line Corp., succeeding R. P. Bascom of St. Louis, who is retiring. R. B. High, vice president and manager of the pipe-line company, will move in that capacity from St. Louis to Houston.

The organization of the holding company, Shell Union Oil Corp., will remain unchanged, and both companies will be located in offices at 50 West Fiftieth Street, New York.

Illinois Geological Society Moves Into New Building

The Illinois Geological Survey moved last week from the Cermics Building to its new home in the recently completed Natural Resources Building just east of the Illinois University stadium. The new building also houses the natural-resources department. New facilities include a library room, room for filing well logs, offices for the various departments of the oil and gas division, map rooms, laboratories and offices for other branches of the survey. Dr. M. M. Leighton is chief of the geological survey while Dr. A. H. Bell is head of the oil and gas division, assisted by Dr. George V. Cohee.

June Production of Illinois Over 14,000,000 Bbl.

The oil and gas division of the Illinois Geological Survey announced in its weekly bulletin last week that estimated production of crude oil for the month of June was 14,652,000 bbl. This exceeds by more than a million barrels the record which was set in May 1940. The report also estimated the recovery from Illinois fields during the first 6 months of the year at 77,916,000 bbl. During 1939 the state produced 94,302,000 bbl. and in 1938 it produced 24,075,000 bbl.

During June the daily average production reached a high of 488,000 bbl. The daily average production for the last week in the month was 518,224 bbl., an all-time peak. During the month, the state produced 62 per cent of the total amount of crude oil delivered to refineries in Illinois, Indiana, Kentucky, Michigan, Ohio, New York, Pennsylvania and West Virginia. For the 6 months period just ended, Illinnois produced 11.4 of the total crude production of the United States.

There were 484 drilling wells and 52 rigs up at the end of June. During the month 338 successful wells were completed to bring the number of producing wells in the new fields of the state to 6,653. There were also two new pools opened during June, one near Irvington in Washington County and the other near Maud in Wabash County. There are now 64 new pools (discovered since 1937) in the state.

Standard Oil (New Jersey) Reports Half Year Earnings of $85,000,000

The Standard Oil Co. (New Jersey) agreed with the New York Stock Exchange last fall to make a 6 months' statement of earnings as soon as possible after mid-year, such statement to incorporate an estimate of items not definitely ascertainable. At the annual meeting on June 4, Pres. W. S. Farish was asked by a shareholder about current earnings. He then said that he had "a pretty good" estimate of the earnings for the first 4 months of 1940 and that if he were to venture a forecast of the business for May and June, for which there were no figures yet in hand, the earnings for the first half year looked to be in excess of $75,000,000.

Since the estimate given at the annual meeting, it has been impossible to maintain communication with representatives on the European Continent, so that for some months now no reports of business still being done in the various countries affected by the war have been received. The company has, however, received estimated returns for the month of May from companies located in the Western Hemisphere. Forecasting June, and including a proportionate allocation of estimated dividends to be received from the company's 50 per cent interest in Standard-Vacuum Oil Co., indications are that the first 6 months' figures will be above those forecast 5 weeks ago, or approximately $85,000,000.

Marketing Alberta Crude

EDMONTON, Alta.—G. R. Cottrelle, federal oil controller, is investigating the possibility of enlarging the Canadian market for Turner Valley crude. It is hoped to find an early market for 9,000 bbl. a day, which would increase Turner Valley allowable to 35,000 bbl. It is believed the Manitoba market will absorb 2,000 bbl. additional and the British Columbia market between 6,000 and 7,000 bbl. a day. The new 10 per cent import tax is expected to facilitate the sale in Canada of Alberta crude, while favorable freight rate adjustments are also anticipated.

Saskatchewan Gas Survey

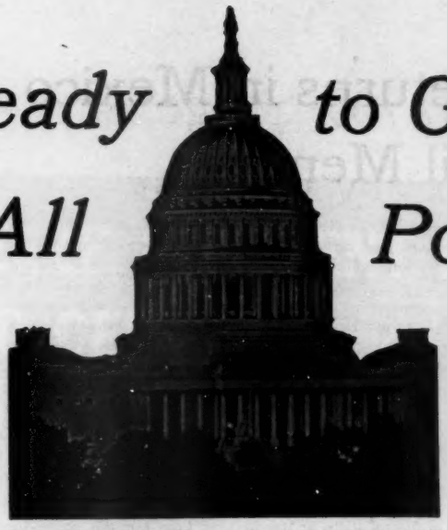
SASKATOON, Sask.—The Northern Natural Gas Co. has practically completed detailed survey for its new distributing system in the city of Saskatoon, as well as a preliminary survey for the transmission line from the Lloydminster field.

The Heiland Research Corp. of Denver, Colo., is starting a seismographic survey of the area between Lloydminster and Unity, representing the first stage of the transmission line. The purpose is to determine the natural-gas possibilities of this area, and to locate the transmission line as conveniently as possible to potential gas reserves. From the Unity-Vera field, the line will turn east over a direct route to Saskatoon The Unity survey is under the general direction of Dr. F. F. Hintze of Salt Lake City, Utah, with A. Hawkins of Denver in charge. The cost of the survey is estimated at $35,000.

Canadian Gasoline Revenue

OTTAWA, Ont.—The Dominion Bureau of Statistics reports that revenue from motor-vehicle registrations and gasoline taxes in Canada in 1939 totaled $79,915,492, compared with $67,477,884 in 1938. Of these amounts gasoline taxes contributed $51,954,360 in 1939 and $41,247,688 in 1938.

Industry Ready to Give Defense Planners All Possible Aid



By HENRY D. RALPH

WASHINGTON, D. C., July 15.—Aviation gasoline and a few of the chemical byproducts of petroleum are the only aspects of the oil industry giving any concern to the national-defense planners at the present time, and even these involve no serious problems.

A definite plan for obtaining sufficient 100-octane aviation gasoline for defense purposes has been worked out by the National Defense Advisory Council under the direction of Dr. Robert E. Wilson under which the Government will purchase and store enough of this special fuel for approximately 100 days of "major effort"—which means war—using all aircraft expected to be on hand a couple of years from now.

The Army and Navy are planning to build storage facilities for aviation gasoline at their airfields and depots to handle much larger supplies than they have been carrying in the past. but the bulk of the storage will be held in tanks built by the refiners. It is planned to place large contracts with the refiners which will give them assurance that they can run at capacity for a year or so, and it is hoped that this will permit a slight reduction in the present price of 100 octane. Contracts will also require the refiners to build suitable storage space, much of it under ground, in which the gasoline will be stored after sale to the Government. The Government will have title to this fuel and will pay a storage charge on it presumably sufficient to amortize the cost of construction. When stored in unleaded condition it is expected there would be no great loss. Capital invested in providing such storage could be depreciated for tax purposes within 5 years under a new program just approved by the president.

The National Advisory Commission for Aeronautics has proposed slight changes in the specifications for 100-octane gasoline now used by the Army and Navy, and if current performance tests prove satisfactory the changes will be adopted. This will permit the production of acceptable fuel by certain plants and processes not now in the business, thus increasing production capacity appreciably without large new investment. At present 100-octane plants are not working at capacity, and the only market has been the Army and Navy, England and France, and Pan American Airways. Other commercial airlines do not use 100-octane gasoline and military authorities are discouraging them from adopting it at this time. With French purchases stopped it is anticipated that there will be ample capacity for all defense purchases contemplated at this time.

Estimate Aviation Gasoline Needs

The huge airplane-production program has now been shaped up to where it is contemplated the Army and Navy will have acquired approximately 25,000 planes of all types in 2 years. As these planes are delivered and put into training use the services will require increasing amounts of 100-octane gasoline, though primary training planes will continue to use lower grades. It has therefore been possible for the defense commission to make a rough estimate of supplies of gasoline needed during the next 2 years either for training or for "major effort." After a year or more these estimates can be altered if necessary.

The storage program when completed will provide a reserve of 100-octane gasoline sufficient to last for 100 days at the estimated rate of consumption in wartime. Productive capacity will be at a rate to supply about 50 per cent of the gasoline needed during war, and since exports would be shut off immediately it is figured that the military forces could get along without any serious shortage until new refining equipment could be built, which would take about 9 months. Instead of providing for additional refining capacity at this time to turn out 100-octane as fast as would be consumed during a war, it was decided that it would be reasonably safe to let capacity remain at about 50 per cent of war demand and to use available funds for building up reserve storage. Much of the storage space will be under ground, either in concrete reservoirs or spheroid metal tanks, covered with enough earth to withstand anything short of a direct hit by a heavy bomb, and planted over with vegetation so as to make the exact location unidentifiable from the air. Other storage will be aboveground in special tanks in regular tank farms, since it is figured that while an enemy plane could easily bomb a tank farm the chances are slight that hits would be made on the particular tanks holding the reserve aviation gasoline. Companies contracting to build this storage space can, of course, obtain loans for the purpose from the Reconstruction Finance Corp. if they desire.

Toluol and Synthetic Rubber

The only other petroleum products at present of concern to the defense planners are toluol and synthetic rubber. Toluol, essential in making TNT and widely used in making lacquers and other industrial processes, was one of the bottleneck items during the last war. Most of it comes from byproduct coke ovens, though in emergency some could be recovered from city gas plants. In recent years an impure grade of toluol has been produced as a byproduct of certain petroleum cracking processes, and while this is usable in making lacquers and some other processes it does not combine readily with nitrogen for making explosives. According to defense commission experts, processes are now being perfected to synthesize pure toluol from petroleum by changing the straight carbon chain of atoms to the "benzene ring" characteristic of tuluol and other coal-tar chemicals. Another possible source is the extraction by refining processes of toluol present in certain special petroleum products. It is believed that these processes are entirely satisfactory and that the petroleum industry can be relied upon as the source of sufficient nitratable toluol for all wartime needs. The exportation of coal-tar toluol has been restricted, but officials feel there is no need to apply export controls to petroleum toluol because production is small and there is no export demand at present. In discussing toluol, E. R. Stettinius, Jr., member of the National Defense Advisory Committee in charge of the materials division, said: "We find industry has given considerable thought to possible requirements and has made plans for developing processes to meet defense needs. A large part of production will come from the petroleum industry which has never before produced this material commercially."

Plans for increasing the production of synthetic rubber, whether from petroleum products or other materials, are being kept secret for the time being, but more information probably will be released in a couple of weeks. In commenting on this, Mr. Stettinius said: "When this commission was appointed it was felt that the problem of adequate rubber supplies was one of the most pressing. For this vital raw material we have been primarily dependent upon the Malay Peninsula and the East Indies. Several weeks ago the president suggested a study of synthetic-rubber production. As a result we have conferred with each of the companies owning or controlling synthetic rubber processes. Several have been developed beyond the experimental stage to a point where plans for individual producing units are being engineered. It is expected that before this month is over a plan of synthetic-rubber production will have been worked out which in the future could eliminate our dependence upon imports."

Transportation

Oil-transportation problems are not considered to constitute a particularly acute defense bottle neck, but it is known that the transportation section of the defense commission, headed by Ralph Budd, is making a study of this matter. Last week Mr. Budd appointed as one of his advisers Fayette B. Dow, Washington representative of the American Petroleum Institute, who is very familiar with rail and pipe-line transportation of petroleum.

New regulations for shipping petroleum products and other dangerous and explosive commodities will be presented to the Interstate Commerce Commission at a formal hearing in Washington August 8. Included in the draft of the regulations are proposed new tank-car specifications prepared by the tank-car committee of the Association of American Railroads which, among other things, provide for the use of welded instead of riveted tank cars. Welded tank cars are now being used to a limited extent under special experimental authority of the I.C.C.

Some 3 years ago the I. C. C. asked the Bureau of Explosives of the Association of American Railroads to revise the regulations, incorporating all outstanding amendments and suggestions for new provisions. The bureau has issued three drafts of this revision which have been subjected to comment by interested parties, and the fourth draft will be presented formally on August 8. On August 5, 6, and 7 representatives of the Bureau of Explosives will be available at the I.C.C. offices to discuss the proposals with shippers.

Early Election Returns in Mexico Unfavorable to Oil Men

HOPES entertained by private oil companies that Mexico's presidential election July 7 would open new channels of discussing and possibly settling the expropriation issue appear to have been blasted. Backers of Gen. Manuel Avila Camacho, who had the support of President Cardenas, claim a 5-to-1 majority in the voting.

Final tabulation of the vote in Mexico probably will not be official until next September when a report is made to Congress. Control of the election machinery under the Mexican system of government rests in the hands of the party in power. Consequently, it is difficult, if not impossible, for any candidate opposed by the administration to attain high office except through revolution.

Gen. Juan Andrew Almazan, conservative candidate who campaigned on a platform of more amicable relations with the United States, has not admitted defeat. His followers assert that their votes cast in undesignated polling booths should be counted since they were prevented from entering ballots in the regular manner by General Camacho's guards.

Confidence of the administration in the final outcome of the election was shown last week by announcement that reforms in the national petroleum administration will be made effective in the near future. Several months before the presidential campaign reached maximum intensity, President Cardenas proposed a series of drastic reforms in an effort to eliminate the deficit of 22,000,000 pesos (about $4,400,000) suffered in 1939 operations. The reform program, calling for modification of the wage scale, vacation pay and elimination of "extra" workers, was held in abeyance in the preelection period. Oil-field workers, a part of the politically powerful labor element, declared strong opposition to the Cardenas program of economy when it was first discussed.

Mexico is producing approximately 110,950 bbl. of crude oil daily at the present time but the European war has placed severe restrictions on its marketing efforts. Export movement from Mexico is mostly to the United States, Latin America and a little to Japan. Prices received for all exported petroleum are substantially under the revenue obtained per barrel under private management, averaging in the recent past between 50 and 60 cents.

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Reorganization of Deep Rock May Be Delayed Until 1941

A petition filed in the Tulsa federal District Court last Saturday indicates reorganization of the Deep Rock Oil Corp. may be delayed until 1941. John J. Shinners, Chicago, chairman of the company's reorganization committee, obtained authority from federal Judge F. E. Kennamer to accept proxies from company note and preferred stockholders until January 15, 1941. Previous authorization would have expired Monday had not Judge Kennamer granted the extension.

In seeking authorization, Mr. Shinners declared that Standard Gas & Electric Co., former Deep Rock "parent company," may appeal from Judge Kennamer's decision disallowing the company a prior share of Deep Rock's assets. If such bears out, the "amended plan could not be consummated until the fall of 1940 or after January 1, 1941," the petition read.

The Circuit Court of Appeals at Denver recently upheld Judge Kennamer's disallowance of Standard's claim. It is expected, however, the company would seek a review in the U. S. Supreme Court. Judge Kennamer has set July 24 as the date for a final hearing on the reorganization plan.

Stay of Injunction Granted In Rowan & Nichols Suit

AUSTIN, Tex.—Enforcement of an injunction obtained by the Rowan & Nichols Oil Co. against the Texas Railroad Commission has been stayed until the case is disposed of in the U. S. Supreme Court, the Attorney General's Department announced Monday. The stay granted pertained to Rowan & Nichols' Todd A lease in the East Texas field, its first case having been decided by the tribunal in favor of the commission early in June. An original stay of enforcement would have expired July 28.

New Institute Committee Appointed for Refineries

F. L. Newcomb, of Standard Oil Development Co., New York, has been elected chairman of the American Petroleum Institute's committee of refinery-inspection supervisors. The committee was organized by the Division of Refining, and has as its first objective the preparation of a code of good practice for refinery-inspection procedure.

R. P. Anderson, of the Institute staff, is secretary, and the members are: Fred Birely, Sun Oil Co., Philadelphia, Pa.; F. B. Bluhm, Sinclair Refining Co., East Chicago, Ind.; W. L. Bowler, Pure Oil Co., Chicago; F. C. Braun, Gulf Oil Corp., Pittsburgh, Pa. R. S. Bridier, Bradford Oil Refining Co., Bradford, Pa.; W. H. Creel, Phillips Petroleum Co., Bartlesville, Okla., and J. K. Deichler, Atlantic Refining Co., Philadelphia.

Also G. C. Dick, Shell Oil Co., Inc., St. Louis, Mo.; C. S. Dunham, Socony-Vacuum Oil Co., Inc., Philadelphia; M. B. Higgins, Texas Co., New York; K. V. King, Standard Oil Co. of California, San Francisco, Calif.; L. D. Mann, Cities Service Oil Co., Bartlesville, Okla.; W. F. Sims, Panhandle Refining Co., Wichita, Falls, Tex.; G. W. Watts, Standard Oil Co. (Indiana), Chicago; and H. F. West, Standard Oil Co. (Ohio), Cleveland, Ohio.

DEATHS

FRANK S. WATSON, 57, production engineer and superintendent of maps for the Ohio Fuel Gas Co. for 30 years, died at Columbus, Ohio, July 6.

WILLIAM J. STEWART, 57, of Pasadena, president of the Compass Oil Co., died at a hospital there July 6 from injuries received in an automobile accident.

LUTHER S. STANDRIDGE, of Mid-Continent Petroleum Co., Tulsa, died July 11 of a heart attack. He was 40 years old. The widow and four children survive.

CAPT. MARCUS ALFRED MIKKELSEN, 65, who served as a master on Gulf Oil Co. tankers for 25 years before his retirement last year, died at Texas City, Tex., last week.

J. A. CHEVALIER, consulting geologist of Muskogee, Okla., died July 15 of cerebral hemorrhage. He was formerly chief geologist for Carter Oil Co. in Tulsa and later was with Peters Petroleum Corp.

WILLIAM SPENCER RALSTON, 70, president of Chaplin-Fulton Manufacturing Co., Pittsburgh, Pa., died on July 3 after an illness of 6 weeks. Mr. Ralston was born in Elderton, Pa., and, after preparation in western Pennsylvania schools, attended Rensselaer Polytechnic Institute and Cornell University, becoming a member of the Delta Kappa Epsilon fraternity. For nearly 40 years Mr. Ralston had been connected with the Chaplin-Fulton Co., of which his father was one of the founders. He was the inventor of a number of pressure regulators and regulator improvements and was well known throughout the oil and gas industries.

WILLIAM P. CAVAVAN, 54, died at an Oklahoma City, Okla., hospital. He underwent an operation about a month ago. He was at one time vice president of the Oklahoma Natural Gas Co. and later an independent operator.

LANSON BATES LAWRENCE, 76, Olean, N. Y., died last week. Mr. Lawrence had been an oil-field worker for many years, having been foreman on the C. P. Byron estate at Cyclone, N. Y., for 30 years. He had been retired for several years.

RAY STREIGHT, 43, district production superintendent for W. I. Southern, Inc., at Russell, Kans., died of heart failure on July 11 at Cisco, Tex. He was a native of West Virginia and for 15 years was employed by Standard Oil Co. of Indiana, of which 5 years were spent in Mexico.

LUKE B. CARTER, 61, Titusville, Pa., died July 6, after a long illness. He had been associated for many years with the Carter Oil Co., which was founded by his father, the late Col. John J. Carter. His widow and a son, John J. Carter II, survive him.

WILLIS W. ROBERTS, 70, pioneer driller and resident of Oklahoma for 35 years, died at his home in Tulsa last week following a protracted illness. A native of Waterford, Pa., Mr. Roberts moved to Oklahoma in 1905 and engaged in drilling work until his retirement several years ago.

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THE MARKETS*

CRUDE OIL: Sinclair Prairie Oil Marketing Co. became the first major purchaser to join the downward movement of crude prices in the Southwest this week. Sinclair Prairie posted flat price of 75 cents per barrel for Mexia and North Texas crude effective 7 a.m., July 16. Panhandle Refining Co. made a flat posting of 75 cents for about 2,000 bbl. daily purchased in North Texas at the same time and Rock Island Refining Co. posted flat 60 cents per barrel for 800 bbl. daily bought in the Tussey pool in southern Oklahoma. La Rosa pool crude in the Refugio district was lowered 25 cents to a flat price of 60 cents July 10 by Amsco Pipe Line Co. Illinois crude moved counterwise. Sohio Corp. announced it would pay $1.05 per barrel for Wabash Valley crude effective August 1, an advance of 5 cents.

REFINERY: Record-breaking domestic demand for motor fuel continues in all parts of the country. Excessive gasoline inventories and lower coastwise transportation rates combine to hold prices at previous low levels. Major companies purchased more liberally in the open-gasoline market in Group 3. Inquiries and spot sales indicated a stronger market for distillate fuel oils for northern movement. Residual fuel is firm to strong in practically all parts of the country. Weak spots are being gradually eliminated in the Chicago retail market.

TANK-WAGON AND POSTED DEALER: Standard Oil Co. of New Jersey reduced light fuel oils a half cent in Delaware, Maryland and District of Columbia. Regular gasoline was lowered a half cent at Raleigh, N. C. Continental Oil Co. announced late-June increases of a cent in regular gasoline in Colorado, Montana and Oklahoma. Standard of New Jersey reduced kerosene tank-wagon prices a half cent at four Virginia cities.

FINANCIAL: Oil shares worked slightly higher. One or two issues made substantial gains. Average of 30 active stocks for week ended July 13: High, 21.34; low, 20.54; close, 20.97. Week ended July 6: High, 21.12; low, 20.60; close, 20.92.

*Detailed information in Market Section.

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UNIVERSAL ATLAS OIL WELL CEMENTS

International

Mexico . .

Company Will Negotiate For Indemnification Terms

DIRECTORS of Penn-Mex Fuel Co., controlled to the extent of 85 per cent by Consolidated Oil Corp., were authorized in New York this week to negotiate with the Mexican Government to determine the amount and manner of indemnification Mexico will pay for expropriated properties.

Penn-Mex had production of about 800 bbl. daily chiefly in the Alamo field on a solid block of about 28,000 acres of leases south of the Tuxpam River when its properties were expropriated March 18, 1938. From the Alamo field to the mouth of the Tuxpam River Penn-Mex operated about 65 miles of 8-in. pipe line and a deep-water loading terminal. The company owned 14 miles of railway from the river to the Alamo field. Consolidated gained 85 per cent of the outstanding securities of Penn-Mex in 1932 by purchase from the South Penn Oil Co.

Sinclair-Pierce Oil Co., another subsidiary of Consolidated whose properties were expropriated by Mexico, recently accepted a settlement involving payment of $8,000,000 over a period by the Mexican Government. The first installment of $1,000,000 has been paid. Consolidated agreed to purchase an undisclosed amount of crude oil from Mexico as a separate transaction at the time of the indemnification settlement.

East Indies . .

B.P.M. Moves East Indies Employes to Egypt

EXECUTION of the mother country and the spread of war clouds to the Near and Far East has caused revisions in the Netherland East Indies' petroleum industry. Reports reached this country last week that N. V. de Bataafsche Petroleum Maatschappij, the Shell operating unit, has transferred several employes from the Netherland East Indies to other parts of the world. So far Germany has made no effort to exercise direct influence over the territorial possessions of conquered Netherlands. However, the private companies, particularly those of British ownership, are looking ahead to the most pessimistic view of the outcome. Consequently, additional capital expenditures in the Netherland possessions are not considered a particularly attractive risk until the situation is clarified. Operations in the Netherland East Indies have followed routine lines since the first of the year. Subsidiaries of the Shell group and Standard-Vacuum Oil Co., the only important operating units, have confined their activity almost entirely to drilling inside locations and routine maintenance work.

A letter from an employe of B.P.M. received in this country said that most of the producing operations in the Netherland East Indies are being discontinued. A direct investigation of operating conditions there, however, indicates that production is being maintained at 1939 levels and that only exploratory efforts have been curtailed until such time as heavy expenditures for this type of work can be made with greater safety.

Several Shell employes have been moved to Egypt where the Anglo-Egyptian Oil Co., Ltd., another operating subsidiary, is the dominant producer and refiner. Need for additional petroleum from Egyptian sources may become pressing if the war with Germany swings into the Balkan countries or the Near East.

Brazil . .

Will Spend Million Dollars In Exploration Operations

BRAZIL will spend approximately $1,109,088 this year in petroleum exploitation and exploration operations. President Vargas has signed a decree law altering, but with no increase in expenditures, the National Petroleum Council budget which became effective January 1. The law is said to provide that of the 25,000 cantos (one canto equaled $48 in United States currency on January 1) the amount of 23,106 cantos, or $1,109,088, be used for oil-drilling purposes.

Another shallow producer near Lobato, on the outskirts of Bahia, has been temporarily shut in pending arrival of pumping equipment from the United States and a deep failure has been abandoned at the Villa Militar. The second producer near Lobato was drilled slightly deeper than the discovery which is estimated capable of producing 20 to 50 bbl. daily from total depth of 1,181 ft. Production from the second well may run around 100 bbl. daily, according to estimates based on recovery by swabbing and on the rate at which fluid enters the hole.

The rig has been moved from the second producing well to a stepout location in the same vicinity.

The exploration in Brazil is currently under the supervision of J. E. Brantly, California and Texas drilling contractor.

Russia . .

Complete Second Pipe Line To Refining Center at Ufa

CONSTRUCTION of a second pipe line from the Ishimbayevo producing district to the refining center at Ufa, north of the Caspian Sea in Russia, a distance of 40 miles, was to have been completed July 1 by Nefteprovodskladstroy Trust. an organization for construction of petroleum pipe lines and storage. Capacity of the new line. which parallels a previously constructed system, is reported to be 4,900,000 bbl. annually, or about 13,500 bbl. daily. The new pipe-line capacity will supply crude from the Ishimbayevo district to the Ufa refinery which was in the midst of an expansive construction program when the European war started. One of the aviation-gasoline installations designed and patented by American engineering companies is located at Ufa. Final stages of construction were left in the hands of Soviet engineers when Americans were recalled a few months ago at the insistence of the U. S. Department of State.

Saudi Arabia . .

Dammam's Second Horizon Displaying Good Permeability

THE second producing horizon at 4,500 ft. in the Dammam field of Saudi Arabia, operated by California Arabian Standard Oil Co., is displaying more than satisfactory permeability. There are 11 oil wells completed in the second pay at 4,500 ft. and their daily average production for the first part of this year was about 26,955 bbl. This production is at the average rate of 2,450 bbl. per well. Three of the 11 wells have been completed since January. At the end of 1939 the eight wells on production at that time each averaged 2,250 bbl. of oil daily.

There are three wells still producing from the discovery level at 2,100 ft. in the Dammam field, but their daily yield totals about 160 bbl. of 50° A.P.I.-gravity oil.

The California Arabian Standard wildcat discovery approximately 100 miles north of the Dammam field and nearer the Persian Gulf coastline remains shut in. Commercial production was established several months ago in the well known as No. 1 Abu Hadriya when drilling was stopped at 10,220 ft. On preliminary test the wildcat discovery produced at the rate of 4,000 bbl. daily under restriction and the crude was 35.5° A.P.I. gravity.

Drilling has been suspended temporarily on the No. 1 MaAgala, a wildcat test west of the Dammam field.

Japan . .

Tokyo Motorists Permitted 7 Gal. of Gas Per Month

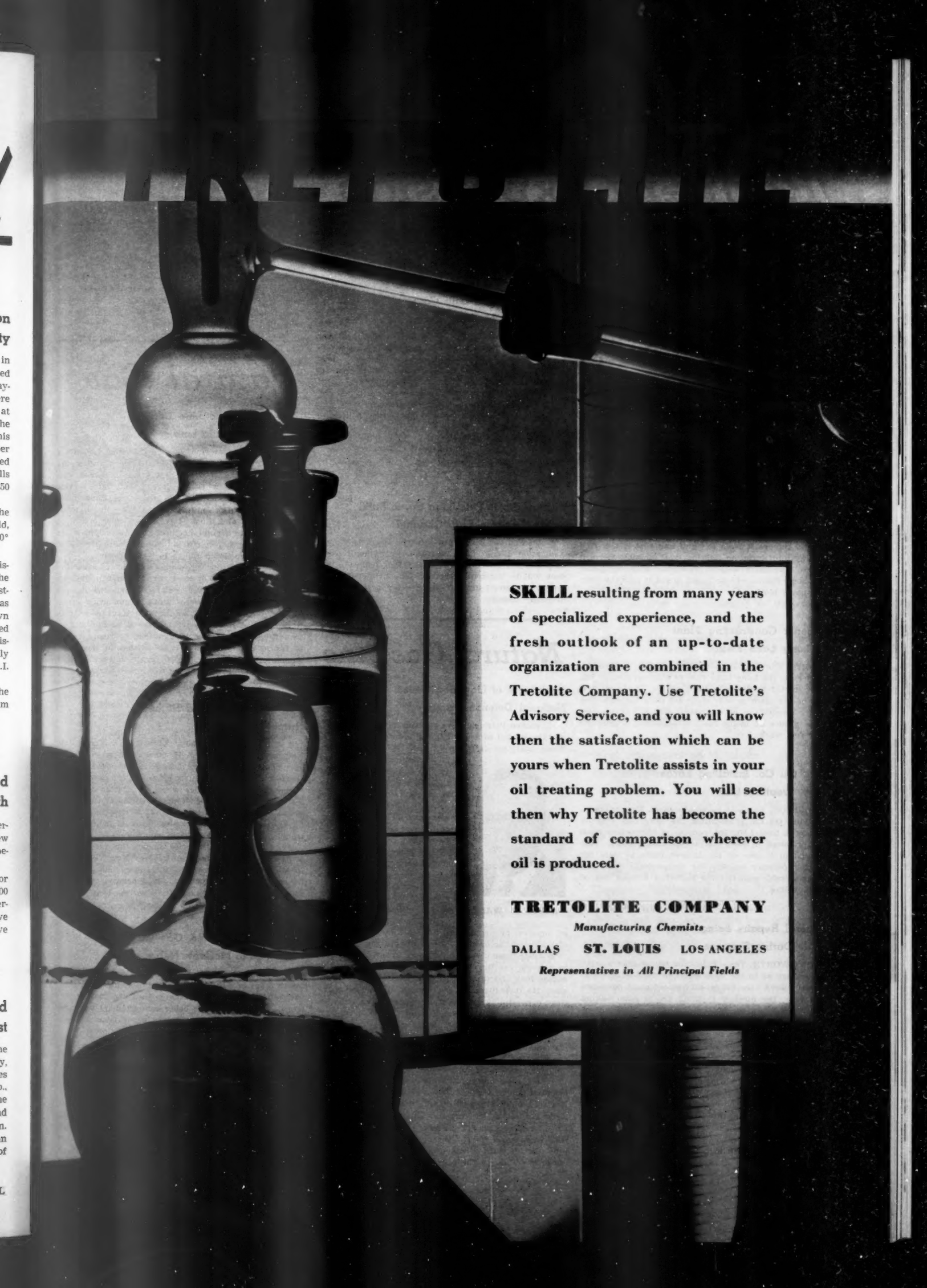
PRIVATE automobiles in Tokyo are now permitted 7 gal. of gasoline per month under new regulations tightening the restrictions on civil petroleum consumption.

Government authorities are reported to favor conversion of approximately half of Tokyo's 3,000 private cars to charcoal-gas-generating units. Certain subsidies in the form of tax reductions have been offered as an incentive to use automotive fuels other than petroleum.

Portugal . .

Oil Showing Encountered In Torres Vedras Test

A SHOWING of oil, said by an official of the exploring company to amount to 60 bbl. daily, has been encountered in an oil test near Torres Vedras in Portugal. The Anglo-Portuguese Oil Co., the exploring company, is drilling deeper in the first test seeking a deeper producing horizon and is preparing to start a second drilling operation. This information was reported by the American consul at Lisbon through the U. S. Bureau of Mines.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Refinery Expansion

What Will Happen to Aviation Gasoline Bought by France?

HOUSTON, Tex.—The disposition of 500,000 bbl. of 92 to 100-octane aviation gasoline purchased by the French and now held in tanks at a Gulf Coast terminal, is causing concern because of its markets.

In the early days of the present war, France purchased the gasoline and had it stored as a reserve supply. French companies also purchased large quantities of Texas crude oil for delivery at their refineries in France where it was converted into aviation gasoline and other products. Then when the French refineries were taken over by the German Army or were disabled by the French, the purchases of crude oil fell off sharply.

Now, the ultimate disposition of this premium fuel becomes the subject of conversation whenever refiners or marketers are inclined to express an opinion or hazard a guess. Many plans are advanced. Included among these is that the material will be taken back by the refining company or companies who made it and that it will be blended off with lower-octane material to be sold locally as ordinary motor fuel. Another suggestion is that it will be taken over by our Government as an important reserve for our mounting fleet of war planes. A few believe that France will find a way to remove it from the gulf and that it will find its way into European fighting craft, possibly German planes. The latter idea is predicated upon the belief that some means will be found to get it past the English naval blockade.

Phoenix Constructing Plant In Long Lake Field

FORT WORTH, Tex.—Construction of a 2,000-bbl. refinery in the Long Lake field of Houston County has been started by Phoenix Refining Co., Houston, Tex. Site of the plant is near Hunt Oil Co.'s gas recycling plant. Completion of the plant, which will produce three grades of motor fuel, is scheduled within the next few weeks.

Pure Oil Co. Installing Large Clay Treating Unit

HOUSTON, Tex.—At its Smiths Bluff, Tex., refinery, the Pure Oil Co. is installing the Gray clay treating process to treat 1,800 bbl. per day of high-octane gasoline produced in their gas-polymerization plant. This installation is one of the largest made to date for treating polymer gasoline for economically removing all undesirable gum-forming materials without loss of octane rating.

General Repairs Being Made During Summer

FORT WORTH, Tex.—Following the practice started 3 years ago as to the most effective method of utilizing the 2-week vacation period granted plant operators each year, the Sinclair Refining Co. is now making general repairs in its local refinery. The first half of July was chosen for these repairs at this plant so as to fit into a program of staggering the vacation periods for the company plants throughout the Middle West.

In each case the plant operators are granted the 2 weeks' vacation and all plant facilities are idle except for certain loading and for the maintenance of safety for the equipment. The entire operating crew is away from the plant during this period and the repair work is left to the maintenance crew. A skeleton organization of plant executives and clerical help is also maintained during the period. In the Middle West the company operates plants at Kansas City and Coffeyville, Kans.; Sand Springs, Okla.; Gladewater and Fort Worth, Tex. Outside this area, the company operates plants in East Chicago, Ind.; Wellsville, N. Y.; Marcus Hook, Pa., and Houston, Tex.

Southwest-Texas Gulf Coast Market Still Marking Time

CORPUS CHRISTI, Tex.—Refineries along the lower Gulf Coast of Texas are curtailing their operations in every respect short of actually shutting down their plants. Those plants which hold contracts for deliveries of gasoline, furnace oils, and fuel oils to the East Coast are of course, in much better shape to withstand the present lack of export orders but comparatively few of these hold contracts of sufficient size and kind to avoid storing one or another plant product. The lack of export orders for low-octane aviation and motor-fuel gasolines is causing the greatest concern. The movement of furnace oils to the East Coast is about the only optimistic factor.

Eastern States Petroleum Co. to Build 600-Ft. Dock on Ship Channel

Permission has been granted by the Harrison County Navigation district for a 600-ft. dock on the Houston Ship Channel to the Eastern States Petroleum Co. The dock will be constructed at the company's Harrisburg refinery. A 30-ft. slip will be dredged in the vicinity of Brady Island.

Natural Gasoline

Usefulness of Liquefied Gases in National Defense Discussed

"Liquefied Petroleum Gas and the National Defense," was the subject of a discussion presented by Henry N. Wade, president of Parkhill-Wade, Los Angeles, Calif., at the annual meeting of the Pacific Coast section of the Liquefied Petroleum Gas Association, held June 27-28 at Santa Barbara. In this timely discussion he suggested some of the trends into which the development of the use of liquefied petroleum gas should be directed in order to yield the greatest benefits in the nation's preparation for defense, as well as in the normal utilization of fuel.

HENRY N. WADE

Mr. Wade divided the uses of liquefied petroleum gas, "L.P.G.," into three broad classifications according to the nature of the use in order to evaluate those uses with reference to national defense as follows: (1) Burning fuel; (2) internal-combustion-engine fuel, and (3) raw material for chemical conversion. He then discussed the various uses under these three general divisions, pointing out how L.P.G. offered advantages in certain uses and how its use would fit into the picture of national defense.

In case of war he pointed out that the following special applications, arranged in their order of potential consumption, seemed to offer the greatest promise of valuable service: (1) As a domestic substitute automotive fuel, releasing gasoline for military use. (2) For essential industrial operations, and as a standby to protect such industries against failure of normal fuel. (3) As a general utility fuel for isolated military bases. Under his first heading he gave the following as reasons why use of L.P.G. as a domestic automobile fuel presented its most effective outlet in the national defense: It speeds up the operation of equipment; it reduces material and labor required for maintenance and it sharply decreases lubricating-oil consumption.

In his discussion of the use of L.P.G. as a raw material for chemical conversion he described the progress made in polymerization and alkyiation, pointing out that now about one-fifth of the total production in the United States is being used for conversion into other materials. Another possible way in which L.P.G. might aid in national defense was for the manufacture of synthetic rubber. He pointed out, however, that production of butadiene (material serving as the starting point in the synthesis of rubber) by cracking crude oil or distillates is probably cheaper than making it from butane, particularly if the butane has a reasonable value for direct use. At present, he said, it was impossible to judge how far this development may affect the utilization of butane for fuel purposes.

Natural Gas

United Gas Pipe Line Co. Completes 35-Mile Line

With testing completed, United Gas Pipe Line Co.'s 35-mile 12-in. line, recently laid to augment the supply of natural gas to city gate and industrial customers in the New Orleans area, went into service recently bringing natural gas from the Long Lake and other fields in South Louisiana. The line extends from Lirette and Long Lake gas fields, south of Houma, La., to a point north of the Mississippi River near St. Rosa, La., where it connects with the 18-in. main line from Baton Rouge to New Orleans.

Laying of the line presented difficult construction problems due to the dense marsh land, numerous bayous, canals and river crossings. Included in construction of the line were multiple submarine crossings of Bayou des Allemands, 1,500 ft., and a 3,000-ft. crossing of the same type at the Mississippi River. Two 10¾-in. lines were used at both of these points to insure uninterrupted service so that in the event trouble should develop in one of the lines the other could be put into use during the repair period.

Utility Heads Defend Higher Natural-Gas Rates

J. F. Robinson, president of the New York State Natural Gas Corp., and J. H. Isherwood, general manager of Allegany Gas Co., defended a proposed rate increase for natural gas interchanged in emergencies between the two companies when the matter came before the Federal Power Commission last week. The proposed increase is from 40 to 45 cents per 1,000 cu. ft., and according to the utility heads, is justified and would not increase costs to consumers.

Explaining why deliveries under the interchange contract so far had been entirely by New York State to Allegany—a fact noted by the commission in ordering hearings on the increase, Mr. Isherwood said this was due to the exhaustion of Allegany's deep producing wells.

Kansas Pipe Line & Gas Co. Lays Line to McCook, Neb.

Construction work of Kansas Pipe Line & Gas Co. for 25 miles of 4-in. and 6-in. pipe to connect the company's gas-transmission system with a distributing system at McCook, Neb., is being conducted by the company's own organization under the supervision of Reese Magee, vice president in charge of operations.

July Allowables for Kansas Gas Fields by Commission

WICHITA, Kans.—The Corporation Commission announced last week July gas allowables of 473,000,000 cu. ft. for the Cunningham pool of Pratt and Kingman counties; 278,000,000 cu. ft. for the Otis pool of Barton and Rush counties, and 186,000,000 cu. ft. for the Lyons pool of Rice County.

Pipe-Line Activity

Diesel tractors with side booms at work on a pipe-line job near Alto, La., lifting pipe and cradling for cleaning machine, and backfilling trench where old 14-in. line had been removed

Indiana Standard Furnishes Crude to Cooperative

The Consumers Cooperative Association which recently completed a line south from its new refinery at Phillipsburg, Kans., is now obtaining approximately 1,200 bbl. daily of crude oil from the Barnett and Walters pools through lease connections loaned by the Standard Oil Co. (Indiana). The crude was made available to the Consumers company when it was unable to secure sufficient oil for its refinery which refines approximately 3,000 bbl. of crude oil daily. The Standard company also cooperated with the Consumers company in securing other connections in fields connected to its line. While the line was being completed the Standard company furnished 30,000 bbl. of crude oil for the Phillipsburg refinery.

Southeastern Pipe Line Affected By Recent Court Decisions

ATLANTA, Ga.—A southern Florida federal District Court devision holding the Southeastern Pipe Line Co. of Atlanta, in contempt of court was affirmed July 10 by the fifth U. S. Circuit Court of Appeals, New Orleans, La.

It is alleged that the company constructed a gasoline pipe line under tracks of the Seaboard Air Line Railway Co., in liquidation, without consent of receivers. In recent weeks this pipe line was prevented from completing construction work, which has been going forward since the first of the year, when the Georgia Supreme Court decided unanimously June 21 that an act of the legislature did not confer upon the Southeastern Pipe Line Co. the power to condemn private property for rights-of-way.

Reversing former Superior Court Judge B. C. Gardner of the Albany Circuit, the high court said the title of the "eminent domain" act provided for such condemnation to be authorized, but the body of the bill did not follow through and establish the authorization.

Judge Gardner denied appeals for interlocutory injunctions against the pipe-line company sought by Decatur County landowners, Ruth V. Botts and Evelyn Alton and Vesta Harrell.

The company has projected construction of a gasoline pipe line from Port St. Joe, Fla., through Georgia to the Tennessee line near Chattanooga. Except for the work involved in laying pipe at numerous highway and railroad crossings and a few miles of line, as well as terminal facilities, the major part of this 450-mile line of 8 and 6-in. pipe has been completed.

Completion of the line will be possible when the Georgia Legislature passes a law specifying that the Southeastern Pipe Line Co. is entitled to exercise the right of eminent domain. The next session of the legislature will be called in January 1941. The majority of the legislature, which had passed the act stating the way in which the right of eminent domain was to be exercised by the company, have signified that it was the intention of the legislature that the company be empowered to exercise the right of eminent domain and that omission of a definite statement of this point was due to an oversight. Opposition to the project is being directed by railroad interests and labor organizations.

Sohio Corp. Purchases Vandale Pipe Line

SAGINAW, Mich.—The Vandale Pipe line Corp. has been purchased by Sohio Corp., subsidiary of Standard Oil Co. of Ohio. The pipe lines operated by Vandale are in the Bloomingdale area in Van Buren County, Michigan.

Northern Natural Laying Gas Lines in Looping Program

C. S. Foreman Co., Kansas City, has completed the 14.1-mile 24-in. loop north of Mullinville, Kans., in the looping program being carried on by Northern Natural Gas Co. This section of the line was put in service last week. Work is now going on at the 25.5-mile 24-in. loop near Bushton, Kans. The looping program involves the laying of 70 miles. With the exception of 9.1 miles of 12-in. all the pipe is 24 in. In addition, this contractor has a contract for laying 24.5 miles of 10-in. gas line for Northern Natural from Ogden, Iowa, to Ames, Iowa, together with multiple submerged crossing of the Des Moines River. C. S. Foreman Co. is electrically welding these lines which are of solid welded construction.

Construction of Six Lakes Field Booster Station Started

SAGINAW, Mich.—Construction of a booster station in the Six Lakes field has been started by Consumers Power Co. and the Michigan Consolidated Gas Co. in order to maintain line pressures of 425 lb. Reservoir pressures have declined to a point where adequate gas volume cannot be pushed through the line in seasons of heavy demand, thus necessitating installation of a booster station. The station, of 60,000,000 cu. ft. daily capacity at a discharge pressure of 425 lb., is being jointly constructed by the two companies with Consumers in charge of the construction. The Six Lakes field is the major source of gas supply for Lansing, Grand Rapids, Bay City and the Saginaw district.

The station, comprised of four 650-hp. compressor units, will take the gas at the field pressure of 225 to 300 lb. and boost it to about 425 lb. discharge pressure in a single stage. Auxiliary equipment will include gas-scrubbing equipment and interstage and aftercooling facilities. Preliminary work has been started and is scheduled for completion by October 1 of this year. F. B. Taylor, Consumers engineer, is in charge of construction.

Louisiana-Nevada Permit Upheld In Circuit Court of Appeals

NEW ORLEANS, La.—A federal-power commission order authorizing the Louisiana-Nevada Transit Co. to construct a gas line from the Cotton Valley field of Webster Parish, North Louisiana, to Okay and Hope, Ark., was upheld by the United States Fifth Circuit Court of Appeals here last week. The order had been upheld in the Arkansas Supreme Court in the previous week, and a petition for review was filed in the appellate court here by the Arkansas-Louisiana Gas Co. which serves customers in portions of the area. Louisiana-Nevada, headed by W. A. Delaney, Jr., of Ada, Okla., plans to build a $440,000 line from the field to industrial and municipal plants in the two cities.

Magnolia Will Lay Line From Oklahoma City to Fort Worth

Right-of-way is being purchased by Magnolia Pipe Line Co. for a 200-mile 4-in. gasoline line from Magnolia Petroleum Co.'s refinery at Fort Worth to Oklahoma City. Although shipments of pipe are being received at pipe yards which have been leased between these two points, construction will not get under way for several months. According to present plans the line will be completed when the refinery at Fort Worth is enlarged. This refinery, which has a capacity of 5,000 bbl. per day, is being expanded to have a capacity of 20,000 bbl.

Work Progresses on Michigan Transmission Line

T. R. Jones, Dallas, Tex., is laying 55 miles of 24-in. line from the Crawfordville station to Montezuma, Ind., for Michigan Gas Transmission Corp., a subsidiary of Columbia Gas & Electric Co. Work is now going on in the vicinity of Rockville, Ind.

Illinois Pipe Line Lays 10-in. Centerville-Bridgeport Line

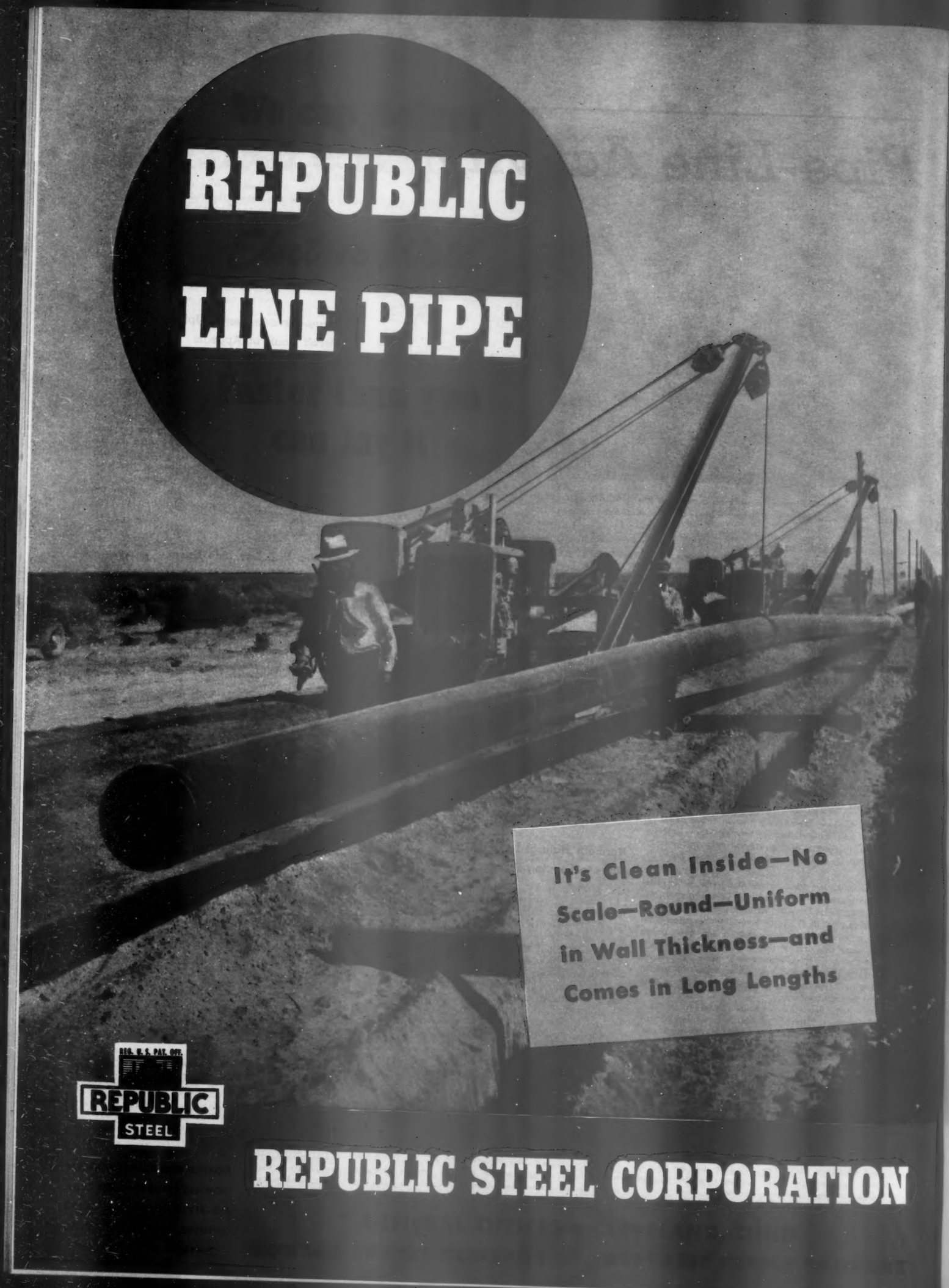
Sheehan Pipe Line Construction Co. is laying 55 miles of 10-in. pipe for a crude-oil line from Centerville, Ill., to the Illinois Pipe Line Co.'s pumping station at Bridgeport, Ill. The line is to be extended to Enfield, Ill.

Study Pacific Pipe Line

OTTAWA, Ont.—In response to a question in Parliament, J. L. Ralston, federal finance minister, stated that the dominion government is seriously studying the possibility of a pipe line to deliver Alberta crude to the Pacific Coast. The government is endeavoring to determine whether the oil deposits are sufficient to justify the pipe line.

Oil-Distributing Plant

DIDSBURY, Alta.—The British American Oil Co. has completed a distributing plant, including warehouse, office, and garage, with about 100,000 gal. storage, at a cost of $10,000.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PROGRAMS AND MEETINGS

Many International Visitors At Los Angeles Nomads Meeting

At the regular monthly meeting of the Nomads in Los Angeles, Calif., held on Wednesday evening, July 10, a gavel was presented by Erne Bonebakker, B. Bongers and F. W. Van Bilderbeek, all of the B.P.M. interests, as a token of appreciation for the courtesies extended to them by the Nomads during their stay in California. The gavel was accepted by Ted Sutter, president of the Los Angeles chapter of Nomads, who explained that it would be used by succeeding presidents as they came into office. On a gold band around the head of the gavel was the inscription 'Ann Onze Zwervende Vrienden" which means in English, "To our roaming friends."

After the dinner which followed the usual business meeting of the club a moving picture was shown with remarks by Walton Hoag, Jr., who was until recently with the Californian-Arabian Standard Oil Co. in the Near East. The pictures depicted the life in Saudi Arabia and around the eastern Mediterranean Sea as well as showing operating conditions in the oil fields of Saudi Arabia.

Visitors from countries outside the United States were: John S. Aston, Ultramar S.A.A.P., Argentina; Ross E. Colley, Socony-Vacuum Oil Co., Venezuela; F. W. Van Bilderbeek, B.P.M., Hague; W. R. Young, C.A.S.O.C.; Charles R. McGee, "Solipema," Bahia, Brazil; H. R. Jones, C.A.S.O.C.; E. W. Wilkins, Mene Grande Oil Co., Venezuela; R. W. Perry, Ultramar S.A.A.P., Argentina; R. M. McCool, Trinidad Petroleum Development Co., Trinidad; Bernard Nicalaas van Dieman de Jel, N.K.P.M.; Dr. F. Brons, B.P.M.; G. H. L. Schepers, N.K.P.M.; E. le M. Trafford, B.P.M.; and A. C. Hall, B.P.M.

Geological Exhibit to Be Feature Of Mississippi Oil Exposition

The Mississippi State Geological Association will cooperate with the Mississippi Oil Exposition, to be held in Yazoo City, August 28 and 29, in furnishing an exhibit of general character. The exhibit will show geological formations of the West Mississippi area, according to Henry Toler, president of the society. Mr. Toler has expressed himself as being highly in favor of the exposition, as it should go far toward educating Mississippi people on the discovery and production of petroleum.

Petroleum-Tax Representatives to Hold Midsummer Meeting

Kansas and Oklahoma area tax representatives of the petroleum industry will hold their third annual midsummer meeting at the Wentz Camp and the Rock Cliff Country Club at Ponca City, Okla., on July 22. The business meetings will be preceded by a week-end outing at the Wentz Camp. This year, members of the Natural Gas Accountants Association will join the tax men, and will participate in both the business and entertainment features of the program.

T. W. Prentice is general chairman of arrangements, assisted by Virgil Smith, Continental Oil Co.; O. H Schoenwald, L. H. Wentz oil division; J. E. Perkins, Northern Oklahoma Gas Co., and J. A. McNeese, Continental Oil Co.

Pennsylvania Oil Producers Hold Meeting in Franklin

The annual meeting of the Central Pennsylvania Oil Producers Association, comprised of producers in four counties in the Pennsylvania oil region, was held in Franklin, July 16. Speakers at the meeting were Russell B. Brown, general counsel for the Independent Petroleum Association of America, and C. E. Buchner, executive secretary of the association and editor of the association's monthly paper.

The same speakers addressed oil producers in the Bradford and Allegany fields at Bradford, July 15. Mr. Brown discussed oil problems in relation to the federal Government, while Mr. Buchner spoke on the activities of the Independent Petroleum Association of America.

May Export Figures Show Third Loss Over 1939

Exports of refined petroleum products in May totaled 13,054,572 bbl., exclusive of greases, asphalt, coke, and wax. The figures, released by the Bureau of Foreign and Domestic Commerce at Washington, show exports of liquid-petroleum products for the month to have been 34.9 per cent less than for the same period in 1939.

Crude-oil exports in May were down 43.4 per cent at 4,885,622 bbl. and total motor-fuel shipments declined 57.3 per cent below the comparable month in 1939. Motor-fuel exports totaled only 1,765,557 bbl. in May this year against 4,138,863 bbl. in 1939.

Kerosene exports declined 40 per cent and gas-oil movement in the offshore trade was down almost 50 per cent.

Residual-fuel-oil exports display the strongest resistance to limitations imposed by the European war. Shipments of residual fuel oil in May aggregated 1,198,689 bbl., a loss of only 23 per cent compared to 1939 exports of 1,556,704 bbl.

Lubricating-oil shipments continued higher than in 1939. Exports totaled 1,156,666 bbl., an increase of 18 per cent over last year. Extent to which lubricating-oil export business has dwindled in recent weeks, however, was predictable in May. For the first 4 months of this year, lubricating-oil exports increased 42 per cent over 1939. Consequently, the meager gain of 18 per cent in the comparative export totals for May was considerably below the previous pace.

Figures on the chief petroleum products moved in export trade in May, last year and this year, appear below.

PETROLEUM EXPORTS—MAY 1939 AND MAY 1940

Product—	May 1940	May 1939
Crude oil	4,885,622	8,642,927
Natural gasoline	172,325	223,038
Aviation gasoline	372,050	(*)
Other gasoline	1,174,023	.....
Total motor fuel†	1,765,557	4,138,863
Mineral spirits	3,357	9,413
Kerosene	376,995	630,995
Gas oil—distillate fuel	1,949,288	3,884,397
Residual fuel oil	1,198,689	1,556,704
Lubricating oils	1,156,666	972,947
Total liquid products	13,054,572	20,059,284
Wax	22,380,815	16,023,321

*Not classified prior to 1940. †Includes naphtha and similar light fuels.

CALENDAR OF EVENTS

August

MISSISSIPPI OIL EXPOSITION, Yazoo City, Miss., August 28-29.

September

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, Spokane, Wash., September 3-5.

AMERICAN CHEMICAL SOCIETY, Detroit, Mich., September 9-13.

NATIONAL PETROLEUM ASSOCIATION, thirty-eighth annual meeting, Hotel Traymore, Atlantic City, N. J., September 18-20.

NATIONAL LUBRICATING GREASE INSTITUTE, annual convention, Stevens Hotel, Chicago, September 30-October 1.

October

NORTH AMERICAN GASOLINE TAX CONFERENCE, Whitley Hotel, Montgomery, Ala., October 3-5.

WESTERN PETROLEUM REFINERS ASSOCIATION, regional technical meeting, Wichita, Kans., October 4.

AMERICAN GAS ASSOCIATION, Atlantic City, N. J., October 7-10.

NATIONAL SAFETY CONGRESS, Stevens Hotel, Chicago, October 7-11.

INDIANA INDEPENDENT PETROLEUM ASSOCIATION, fall convention, Hotel Severin, Indianapolis, Ind., October 9-10.

AUTOMOBILE MANUFACTURERS ASSOCIATION, Auto Show, New York, October 12.

INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA, eleventh annual meeting, Dallas, Tex., October 16-18.

PETROLEUM DIVISION, A.I.M.E., October 24, 25 and 26, Tulsa.

WESTERN PETROLEUM REFINERS ASSOCIATION, regional technical meeting, Shreveport, La., October 25.

TEXAS MID-CONTINENT OIL AND GAS ASSOCIATION, annual convention, celebrating Texas oil's forty-fifth birthday, Fort Worth, Tex., October 21-November 2.

November

AMERICAN PETROLEUM INSTITUTE, twenty-first annual meeting, Stevens Hotel, Chicago, November 11-15.

1941

February

AMERICAN PETROLEUM INSTITUTE, southwestern district regular spring meeting, Washington-Youree Hotel, Shreveport, La., February 27-28.

March

AMERICAN SOCIETY FOR TESTING MATERIALS, Hotel Mayflower, Washington, D. C., March 3-7.

April

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, twenty-sixth annual meeting, Rice Hotel, Houston, Tex., April 2, 3, and 4.

INDIANA INDEPENDENT PETROLEUM ASSOCIATION, spring convention and trade exhibit, Hotel Severin, Indianapolis, Ind., April 11-13.

NATIONAL PETROLEUM ASSOCIATION, semi-annual meeting, Hotel Cleveland, Cleveland, Ohio, April 24-25.

June

AMERICAN SOCIETY FOR TESTING MATERIALS, forty-fourth annual meeting, Palmer House, Chicago, June 23-27.

Just the right size

If your refinery is big enough to run crude oil it is big enough to run a Dubbscracking unit, too, and you ought to have one

Dubbscracking units and combination units come in all sizes, as big or small as you want—each designed to fit your needs

When a small refiner installs Dubbscracking he soon gets to be a bigger refiner because his customers like Dubbscracked gasoline and keep coming back for more

Have you noticed how many refiners are increasing their Dubbscracking capacity?

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

Service on Active Fields

Paloma Field, Kern County, California

Compiled by The Oil and Gas Journal

Approved name
Paloma.

Geographic location
The field is located in the extreme southern end of the San Joaquin Valley, immediately east of the Buena Vista Lake gas field and about 15 miles southwest of Bakersfield, county seat of Kern County.

Principal cities and towns
Bakersfield, with a population of about 50,000 is the nearest city. Los Angeles is about 120 miles south of the productive area.

Highways and roads
U. S. Highway 99, from Los Angeles to Oregon, passes through Bakersfield. State Highways 399 and 166 pass within a short distance of the field.

Railroads serving the area
The main line of the Southern Pacific's Valley Division passes through Bakersfield.

Supply-company branches
A number of supply companies have branches at Bakersfield, Taft, McKittrick, Maricopa, Fellows, and adjacent areas. Some equipment is delivered by truck from Los Angeles.

Trucking companies
Ample trucking facilities are available.

Hotels and accommodations
Air-cooled hotels are available at Bakersfield and a number of Mo-tels are located outside of Bakersfield.

Schools and churches
Bakersfield has several churches and a modern public-school system.

Electric power and gas companies
The area is supplied with electric power by San Joaquin Light & Power Co., and Southern California Gas Co. furnishes ample natural gas for domestic and commercial use.

Development to date
Western Gulf Oil Co. in a joint test with Texas Co. late in the summer of 1939 completed the discovery well, No. 1 Kern County Land-Panhandle, in the Paloma field. Initial flow was at the rate of 2,280 bbl. a day during a ½-hour gage, of 50-gravity distillate, through a 20/64-in. bean. The well is near the center of Section 3, Township 32s, Range, 26e, immediately east of the old Buena Vista Lake gas field. The discovery well is 10,178 ft. deep and production is coming from the Stevens zone which produces at Cole's Levee, Greeley, Ten Section, Strand, and Canal. Top of the sand was found at 10,013 ft., there being approximately 120 ft. of sand within the 181 ft. of producing zone open below the 7⅝-in. water shutoff at 9,997 ft. The productive sand has an average porosity of 20 per cent and an average permeability of 135 millidarcys. The top portion of this sand body is predominantly a gas sand of very low permeability.

Future development
Due to large holdings, development has been slow and will probably continue at a retarded rate for some time.

Completions to date
Two wells have been completed to date. These are the joint discovery well of Western Gulf and Texas and No. 43-3-B Kern County Land of Ohio Oil Co. in Section 3-32-26.

Number of operations
As of June 30, there was one string of tools in operation. Western Gulf and Texas Co. in joint operations were drilling No. 74-3-A Kern County Land in Section 3-32-26.

Lease ownership
The leases and holdings are all in large blocks. In addition to Western Gulf, Texas Co., and Ohio Oil Co., Union Oil Co. holds leases on the northwest and southeast quarters of Section 34-21-26 immediately adjoining the discovery acreage on the north as well as some other widely spaced acreage. Superior Oil Co. holds a lease on the northeast quarter, 160 acres, of Section 34-31-26 and the south half, 320 acres, of Section 35-31-26. Western Gulf and Texas Co. have leases on all but a small part of Sections 2, 3, and 11 in Township 32, Range 26, and Ohio Oil Co. has leases on all of Sections 4, 5, and 6 in Township 32, Range 26, as well as large holdings in Sections 8, 9, and 10 in Township 32, Range 26, and Sections 32 and 33 in Township 31, Range 26. There are a number of relatively small holdings north and south of the Paloma field which may possibly form part of the structure. Seismograph records showed the potentially productive area as being very limited in area, although no closure was shown west of the discovery.

GEOLOGY

Subsurface conditions are relatively soft, conducive to rapid drilling although a hard streak just above the Stevens zone slows drilling to some extent. The area consists of a broad flat plain with no indication of structure. The discovery was made by reflection seismograph which indicated the existence of a buried structure although the original survey failed to show closure in the west end. Structurally, production is derived from a northwest-southeast trending dome with several hundred feet of closure, lying along the Elk Hills line of folding, en echelon and east of the Elk Hills field itself. An attempt of Western Gulf Oil Co. to develop production below the Stevens sand failed when a depth of 11,216 ft. had been reached and correlation work indicated the Rio Bravo and Vedder zones could not be expected above 13,000 ft. Transition from lower Pliocene to upper Miocene in the discovery well was noted at 9,468 ft. but the change was very gradual, there being no marked break. Top of the Stevens zone in the discovery well was very tight and lacked sufficient porosity to permit a natural flow of oil although it appeared to be well saturated. The lower part of the hole contained some shale breaks and the size of sand grains and porosity increased.

DRILLING CONDITIONS

Derricks
A standard 136-ft. steel derrick has been used to date.

Type of drilling equipment
All rigs and drilling equipment have been of standard type and are steam driven.

Speed and cost of drilling
Drilling has been slow and costs relatively high. Under ordinary conditions and after subsurface conditions and trends of the structure have been ascertained, wells should be drilled from spud to completion in about 8 weeks with standard equipment. Wells of this depth will cost approximately $100,000.

Character of mud
There is no mud problem and it is not necessary to carry a heavy mud. About 3 points are maintained on the bit and when the top of the Stevens is cored drilling mud is kept at the desired consistency.

Casing program
Usual practice is to set a minimum of 1,200 ft. of 13⅜-in. surface pipe followed by an 8⅝-in. water string and a 6⅝-in. perforated liner. With later development this program may be varied.

Type of bits used

Formations above the Stevens sand are relatively soft. In the lower part of the hole just above the Stevens sand and for a limited distance, rock bits are necessary for a short distance.

Completion methods

Wells are completed by landing a perforated liner of sufficient size and length and swabbing in through 2½-in. tubing. No. 74-3-A Kern County Land of Western Gulf Oil Co. carried to 11,216 ft. as a deep test and plugged back to 10,700 ft. has a string of 8⅝-in. casing cemented at 10,052 ft. and 728 ft. of 5½-in. blank liner landed at 10,698 ft. The company cored some streaks of gray sand in the bottom of the Stevens and has been shooting these intervals to ascertain if they carry water. If these intervals are dry the entire zone will be produced.

Shooting and acidizing

California wells are not shot to stimulate production and the productive Stevens sand does not require acidizing.

PRODUCING PRACTICES

Method of producing oil and gas

The field is still in the flush stage.

Separators and tankage

Due to the small allowable daily production only small tanks have been provided.

Water conditions

No bottom water or edge water has been encountered.

Bottom-hole pressures

No original bottom-hole pressures are available. In the discovery well, a reading February 3, 1940, showed 4,720 lb. pressure and a temperature of 235° F. at 9,900 ft. The gradiant is 12.3 per 100 lb. and the productivity index is 1.9.

Gas-oil ratio

Original production of the discovery well in the Paloma field was 2,280 bbl. of 50-gravity oil and 14,750,000 cu. ft. of gas, a ratio of 6,470 cu. ft. of gas per barrel of fluid. At the close of June 1940 production was 179 bbl. of oil and 1,192,000 cu. ft. of gas, a ratio of 6,659 cu. ft. to each barrel. Two wells are now producing from this zone. Original gravity was 50° A.P.I. and present gravity is 51.5°.

GENERAL DATA

Field rules

Present plans contemplate the drilling of one well to each 20 acres with the locations staggered.

Daily allowable

On July 1, 1940, the Paloma field, which has two wells capable of producing, has an allowable of 168 bbl. each per day.

Pipe-line outlets

Practically all California major buyers have pipe-line facilities within a relatively few miles.

Properties of crude oil

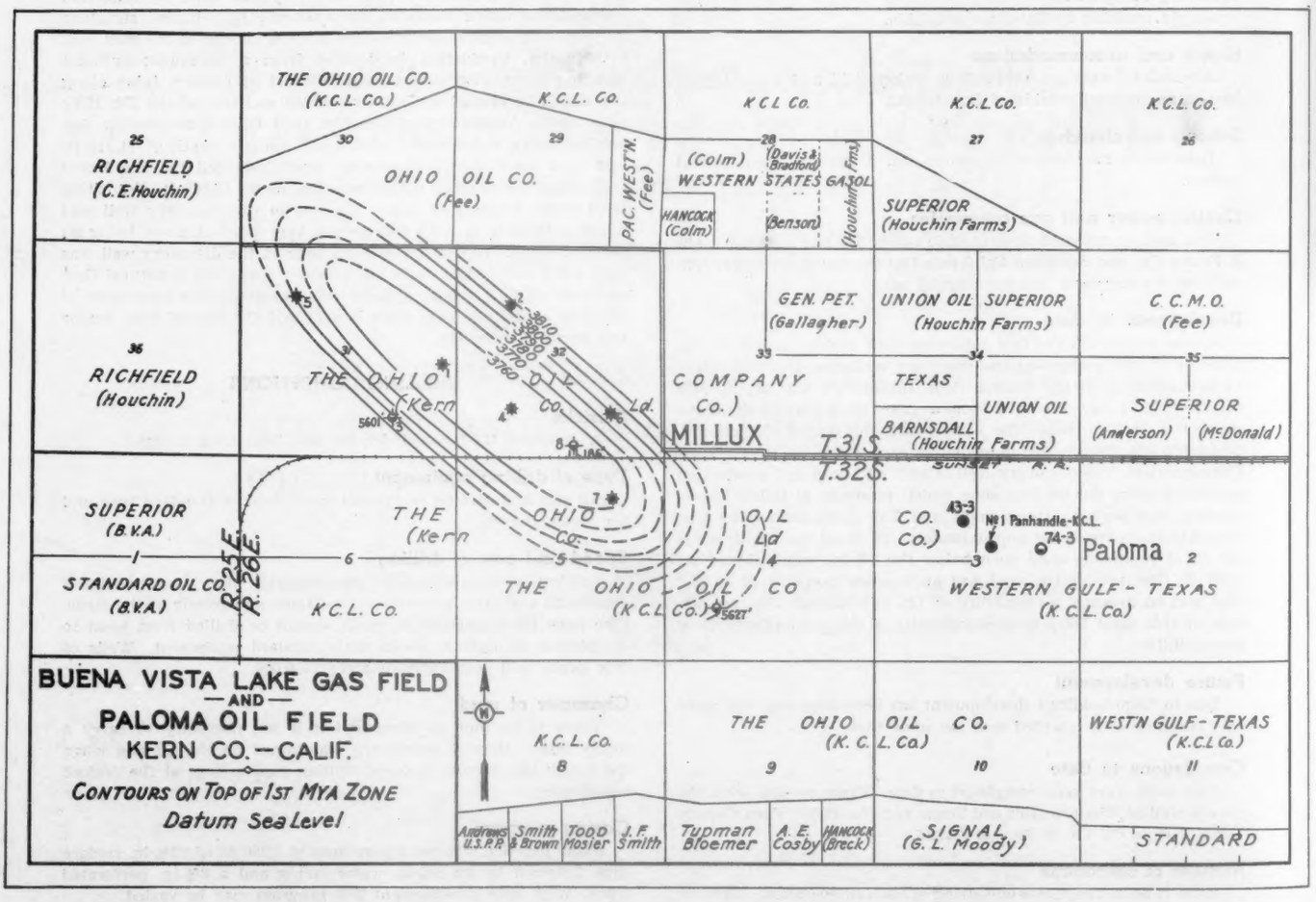
An analysis of crude oil from the discovery well in the Paloma field showed:

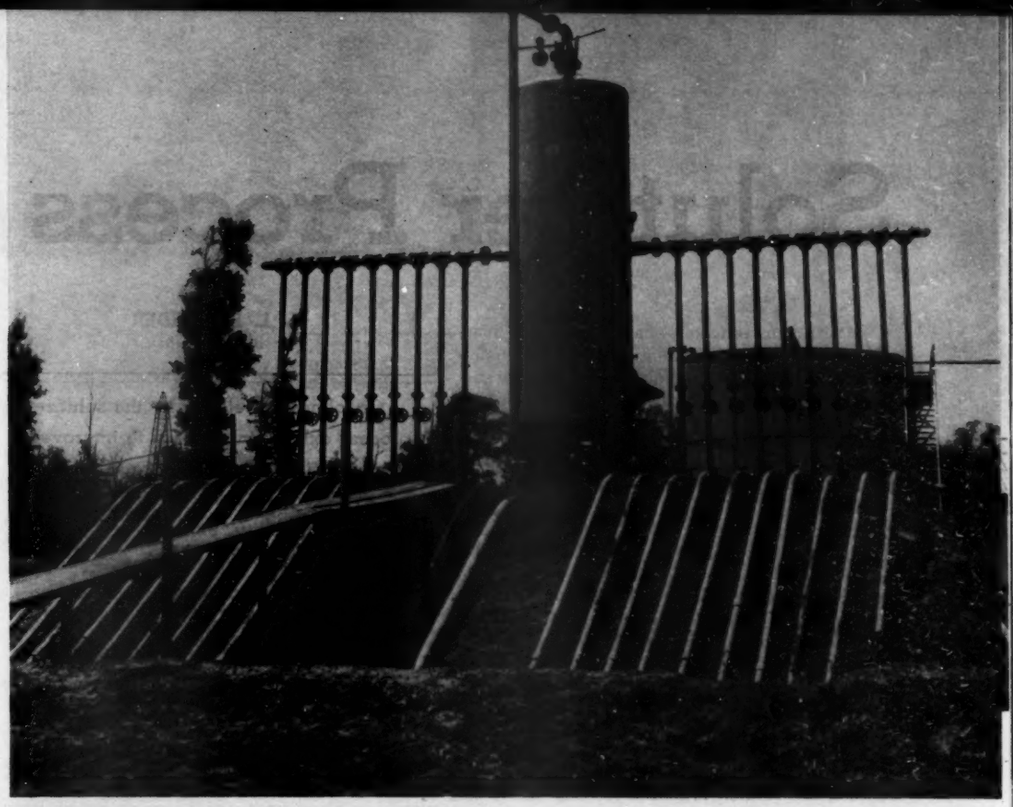
DETERMINATIONS ON DRY OIL

Gravity at 60° F. (A.S.T.M.—D287-36), degrees A.P.I.	52.8
Asphalt at 80° F. (A.S.T.M.—D243-32T)	none
Paraffin (K.C.T.L method), per cent	0.59
Sulfur (A.S.T.M—D129-34), per cent	0.10

COMMERCIAL PRODUCTS

U. S. motor gasoline, per cent	71.63
Gasoline, 437° F. end point (Gravity 61.6° A.P.I.), per cent	71.63
Kerosene stock (Gravity 37.4° A.P.I.), per cent	4.57
Gas oil (Gravity 35.2° A.P.I.), per cent	10.00
Residuum (Gravity 27.6° A.P.I.), per cent	13.80
Octane number (A.S.T.M.—D357 37T) on 437° F. end-point gasoline	61.0





In the interests of economy practically all of today's oil production is flowed through central separators to central tank batteries. This is made possible largely due to low per-well allowables. Various manifolds are used to connect the wells to the separator but the type shown here, used on a lease in the East Texas field, has met with the most widespread approval

ENGINEERING & OPERATION

JULY 18, 1940

Solutizer Process for Sweet

By L. E. BORDER
Shell Oil Co., Inc.

Gasolines sweetened by the solutizer process exhibit, in addition to improved odor and lower sulfur content, an attractive increase in octane number and lead susceptibility. Pertinent data from a variety of gasolines, both straightrun and cracked, which were sweetened on a semicommercial-scale pilot plant are presented in this paper. Multistage mixer-settler extraction is compared with that in a packed tower and details of the regeneration of the solutizer solution are given.

VARIOUS investigators[1] have shown that mercaptans, organic sulfides, disulfides and polysulfides depreciate the octane number and lead susceptibility of gasolines. In addition, the mercaptans contribute their characteristic disagreeable odor. Because of the gasoline consumer's objection to this latter property, treating methods have been developed for "sweetening" the gasoline. The more commonly used processes involve an oxidation of the mercaptans to one or more of the above-related compounds, thus improving the odor but not the antiknock characteristics of the gasoline. The solutizer process, however, extracts the mercaptans from the gasoline, thereby improving its octane number and lead susceptibility in addition to eliminating the objectionable odor and reducing the sulfur content. This paper describes the performance of a semicommercial-scale solutizer pilot plant which has been in operation since May 1938.

The principle of the process has been presented in previous papers[2] and consists, briefly, in the addition of a suitable organic solvent or salt to an aqueous alkaline solution which imparts to the "solutized" solution the unique property of a relatively high solubility for mercaptans. Of numerous materials tested as solutizers, the potassium salt of isobutyric acid dissolved in potassium hydroxide solution was chosen for the pilot-plant work because it satisfactorily met each of the following criteria of a solutizer:

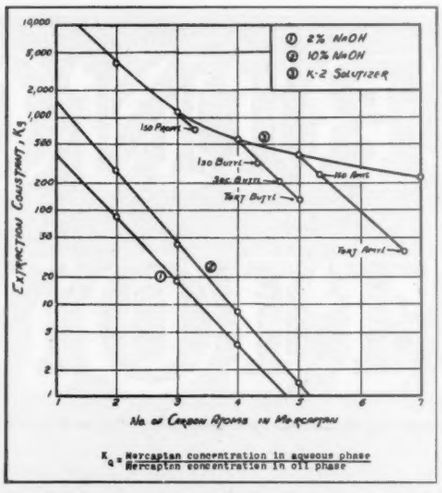


Fig. 1—Extraction of a series of pure mercaptans from isooctane at 20° C. with aqueous alkaline solutions. (Reprinted from Reference 2b)

1. It increases markedly the solubility of mercaptans in aqueous alkaline solution. (See Fig. 1.)
2. It is quite soluble in aqueous caustic solution.
3. It is insoluble in gasoline.
4. It is nonvolatile and does not decompose at the temperature employed in the regeneration.
5. It is a well-established commercial product.

A typical analysis of the solutizer taken from the outlet of the regenerator while sweetening 400° F. end-point straightrun West Texas gasoline is shown in Table 1.

Solutizer Pilot-Plant Equipment and Operation

The solutizer treating unit includes an extraction section and a regenerating section with the solutizer solution recycled indefinitely. The performance of two types of extractors, a four-stage mixer and settler system and a packed tower, have been investigated. Two methods of regeneration were also studied, one involving the direct injection of steam into the bottom of the stripping column and the other a system of closed reboiling in which the overhead aqueous condensate was returned to the top of the column as a diluent and subsequently vaporized in the reboiler to supply the stripping medium.

Extraction Section

A description of the mixer-settler extraction system with a flow diagram has been presented in a previous paper.[2b] It consists essentially of a series of four orifice-type mixers, each with a 14-in. diameter by 8-ft.-long horizontal settler with facilities for injecting the regenerated solutizer ahead of the last mixer. Interstage gasoline-transfer pumps increase the pressure 10-12 lb. from stage to stage, thus forcing the solutizer in a countercurrent direction, that from each stage flowing to the upstream side of the mixer on the preceding stage. The entire system is preceded by a two-stage dilute caustic soda pretreater used for removal of hydrogen sulfide and other compounds more acidic than mercaptans. The temperature of the gasoline inlet stream is controlled by a heat exchanger employing either steam or cold water as desired. The flow of gasoline is controlled by an automatic flow-recorder controller and the solutizer by an adjustable-stroke piston pump and a flow recorder.

One of the primary purposes of the investigation has been to determine the most economical conditions for producing a doctor-sweet product. The operation of the extractor has, therefore, consisted of adjusting the solutizer-to-gasoline ratio to the minimum required for producing a raffinate containing from 0.0003 to 0.0005 per cent by weight of mercaptan sulfur depending upon the stock treated.

TABLE 1—REPRESENTATIVE COMPOSITION OF SOLUTIZER USED FOR SWEETENING 400° F. END-POINT STRAIGHTRUN WEST TEXAS GASOLINE

	Normalities	
	Original	After 3 months' service
Potassium hydroxide (KOH)	6.00	6.02
Potassium isobutyrate (KIB)	3.00	2.94
Potassium carbonate (K_2CO_3)	0.40	0.41
Potassium mercaptide (KSR)	...	0.006
Potassium sulfide (K_2S)	...	0.001

For the best performance the solutizer should flow uniformly from stage to stage in order that the same solvent ratio is maintained in each mixer. This condition was most nearly approached by operating the system without levels of solution in the settlers. Under this method of operation a small amount of gasoline was allowed to recycle with the solutizer.

In order to determine the relative merits of the two methods, an 8-in.-diameter packed tower, 42 ft. high, containing 25 ft. of 1 by 1-in. steel-ring packing, was substituted for the mixer-settler extraction system. A simplified flow diagram of this unit is shown in Fig. 2. This extractor is simpler to operate and more economical than the mixer-settler equipment since it incorporates a multiplicity of stages in a single vessel and requires only two pumps, one for the untreated gasoline and another for the solutizer solution. The automatically controlled gasoline stream enters the tower 1 ft. below the packing and flows upward by gravity differential (specific gravity of solutizer equals 1.375 at 60° F.). An orifice distributor at the gasoline inlet disperses the gasoline over the cross-section of the tower. The degree of dispersion is of minor importance as indicated by the fact that no variation in the amount of mercaptans extracted was observed while maintaining a constant solutizer-to-gasoline ratio and varying the distributor-jet velocity from 10 ft. to 50 ft. per second.

The solutizer solution enters the tower 1 ft. above the packing and is maintained at the continuous phase beneath this point by means of an automatic level controller placed 2½ ft. above the packing. This level controller actuates a diaphragm valve in the spent-solutizer line at the base of the tower. Nine feet of tower length above the packing serves as a disengaging space for separating solutizer from the effluent gasoline and another 8 ft. below the packing permits separation of entrained gasoline from the spent solutizer. This latter space proved to be inadequate to separate all of the gasoline from the spent solution and was supplemented by installing a 75-gal. vessel in the solutizer offtake line with a vent from its top connected into the tower 8 ft. from the base so that gasoline which separated in the vessel could flow by gravity back into the tower.

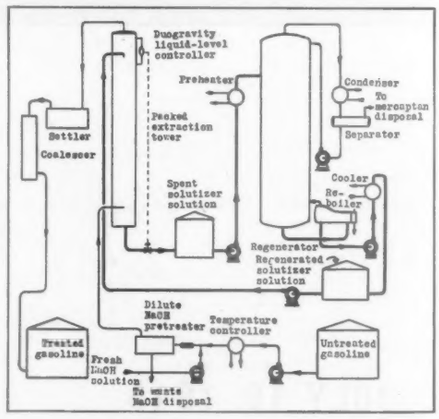


Fig. 2—Simplified flow diagram of solutizer pilot plant

The raffinate from both the mixer-settler system and the packed towers contains a microsuspension of solutizer equivalent to 0.01-0.02 per cent by volume of the gasoline. Thirty minutes settling

ening Gasolines

reduces this to the order of 0.005 per cent, but 12 to 16 hours are required for complete clarification. A coalescer 14 in. in diameter and 5 ft. high filled with steel wool has proved very effective in recovering the suspended solutizer from the raffinate. At rates as high as 800-900 gal. per hour the gasoline flows from this coalescer perfectly bright and free of solutizer. The first charge of steel wool is still in service after 6 months without any depreciation in effectiveness or signs of corrosion.

The capacity of the tower was found to vary with the ratio of solutizer to gasoline employed as shown in Fig. 3. These capacity determinations were made by first adjusting the solutizer-to-gasoline ratio to the minimum required for sweetening and then increasing the charging rates of both

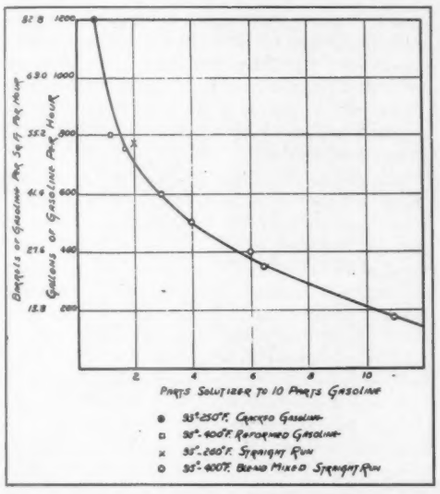

Barrels of Gasoline per Sq. Ft. per Hour
Gallons of Gasoline per Hour
Parts Solutizer to 10 Parts Gasoline
35°-250°F. Cracked Gasoline
35°-400°F. Reformed Gasoline
35°-260°F. Straight Run
35°-400°F. Blend Mixed Straight Run

Fig. 3—Variation in capacity of 8-in. packed extraction tower with different solutizer ratios

phases proportionately until droplets of solutizer were carried out the top of the tower with the raffinate. For each particular ratio the degree of mercaptan removal remained constant over the range of treating rates studied. The data in Fig. 3 should be generally applicable since they were obtained while treating four different gasolines.

A second packed tower 16 in. in diameter but in all other respects identical to the 8-in. tower was installed in order to determine the relationship between cross-section and capacity. For a fixed solutizer-to-gasoline ratio the degree of mercaptan removal was the same in both towers and the capacities of the two towers were found to be proportional to their cross-sections, that of the 16-in. being at least four times that shown in Fig. 3. It should be possible to predict, by extrapolation within reasonable limits, the capacity of towers of larger diameter. It is pointed out, however, that with the capacity limitation defined by the inception of overhead entrainment, the data shown in Fig. 3 apply only to extraction towers having a disengaging space above the packing bed equivalent to 9 ft. of tower length. A photograph of the two extraction towers and the regenerating column is shown here.

Table 2 shows a comparison between extractions performed in the four-stage mixer-settler equipment and the 8-in. packed tower.

While employing the mixer-settler system the mercaptan sulfur content (0.05 per cent by

TABLE 2—COMPARISON OF PERFORMANCE OF MIXER-SETTLER AND PACKED-TOWER EXTRACTION SYSTEMS

	Treating 260° F. end-point straightrun West Texas gasoline	
	Four-stage mixer-settler system	8-in. packed tower
Mercaptan sulfur content of sour gasoline, per cent by weight	0.035	0.035
Mercaptan sulfur content of raffinate, per cent by weight	0.0006	Doctor sweet
Solutizer-to-gasoline ratio	3.5:10	3.5:10
Steam for solutizer regeneration, lb./bbl. gasoline	26	26
Extraction temperature, ° F.	85	85

weight) of 400° F. end-point straightrun West Texas gasoline could not be reduced below 0.0017 per cent by weight, but in the packed tower this gasoline was satisfactorily sweetened, that is, its mercaptan sulfur content was reduced to at least 0.0004 per cent by weight. The three main variables affecting the degree of extraction are solutizer concentration, solutizer-to-gasoline ratio and temperature. Fig. 4, which is indicative of the procedure employed to determine the conditions for sweetening various gasolines, shows the progressive reduction in the mercaptan sulfur content of West Texas

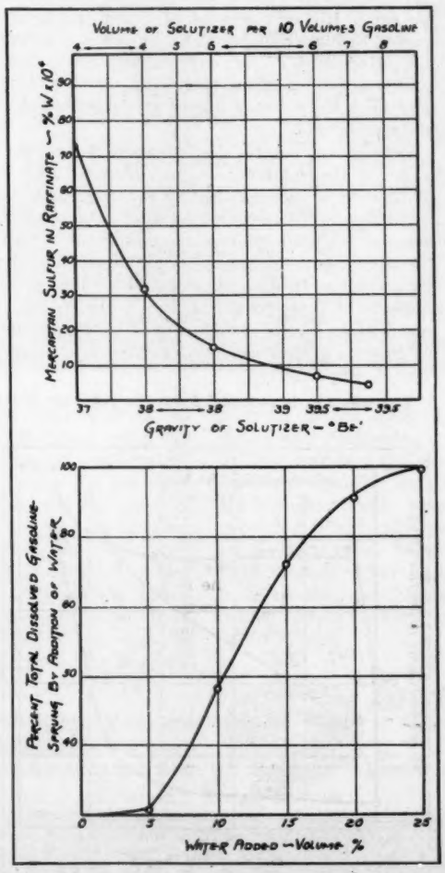
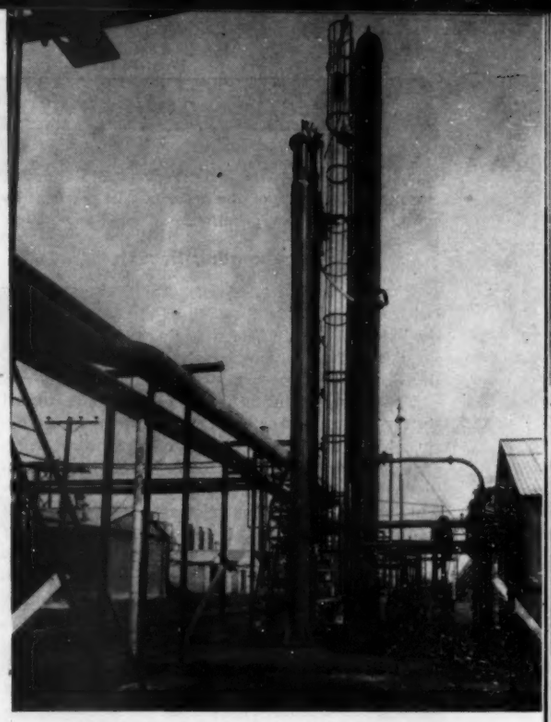

Volume of Solutizer per 10 Volumes Gasoline
Mercaptan Sulfur in Raffinate — % W x 10⁴
Gravity of Solutizer — °Bé'
Percent Total Dissolved Gasoline Sprung by Addition of Water
Water Added — Volume %

Fig. 4—(Top) Progressive reduction of mercaptan sulfur content of 400° end-point West Texas gasoline obtained by alternate increments in solutizer concentration and ratio. (Mercaptan sulfur content of sour stock, 0.05 per cent by weight.) Fig. 5—(Bottom) Effect of predilution on solubility of gasoline in solutizer



Extraction towers and regenerating column of solutizer pilot plant. The building houses the chemical tanks, pumps and preheater

gasoline when treating at a constant temperature of 85° F. and changing the other two variables. In this case the mercaptan sulfur content of the raffinate was reduced from 0.0072 to 0.0004 per cent by weight by increasing the Baume gravity from 37° to 39.5° and the treating ratio from 4 to 7.5. It is pointed out that the smoothness of the curve shown is entirely fortuitous and that in general a plot of this nature shows discontinuities.

The distribution or extraction coefficient decreases rapidly as the treating temperature is increased, thus requiring both a higher solutizer ratio and higher unit steam consumption to obtain equal mercaptan removal. The data in Table 3 show the effect of varying the treating temperature.

Solubility of Gasoline

The solubility of gasoline in the solutizer solution is of the order of 0.3 to 0.5 per cent of the solution volume depending upon its temperature and concentration, and on the type of gasoline being treated. The solubilities of typical gasolines are shown in Table 4.

Gasoline losses are, therefore, determined by the amount dissolved in the spent solutizer as it enters the regenerating column. For example, while treating full-range West Texas gasoline with a solutizer ratio of 7.5 parts to 10 of gasoline, and a solubility of 0.5 per cent, the gasoline loss would be equivalent to 0.375 per cent of the raw-gasoline volume if the spent solutizer were charged to the regenerator as such. This loss may be practically eliminated, however, by utilizing the property of a lower gasoline solubility in more dilute solutizer concentrations. Fig. 5 shows the proportion of dissolved gasoline "sprung" from a concentrated 6N KOH-3N KIB solutizer by dilution with water.

This principle is incorporated in commercial designs by diverting the mercaptan-free diluent from the bottom tray of the condensate-stripping section of the regenerator into the spent-solution tank. The gasoline liberated by this dilution is returned to the main gasoline stream. Although its mercaptan content may be higher than that of the raw gasoline its volume is so small that the quantity of mercaptans recycled thereby is negligible. In the specific case of the West Texas gasoline which requires 55 lb. of stripping steam per barrel of gasoline for sweetening, the available diluent would equal 21 per cent of the solutizer volume and from Fig. 5 approximately 90 per cent of the

dissolved gasoline would be recovered. The actual loss would then be of the order of 0.04 per cent by volume of the raw gasoline.

Regenerating Section

The spent solutizer is regenerated[2e] by stripping with steam. A flow diagram of the regenerator is included in Fig. 2. The stripping column is 24 in. in diameter and was originally 52 ft. high containing 30 bubble trays spaced at 18-in. intervals.

The flow of solution to the column is regulated in the same manner as in the extractor by an adjustable-stroke piston pump and a flow recorder. The solution enters the tower through a steam-heated preheater and flows downward countercurrently to the stripping steam. By one method of stripping, the steam is injected into the base of the column, and the overhead, containing mercaptan vapors, is condensed and both phases discarded. In this case the stripped solutizer solution is pumped from the base of the tower through the cooler and is ready for further use. By the other method the aqueous condensate is continuously returned to the top of the tower as a diluent and the diluted solutizer flows from the bottom of the tower into the reboiler where it is reconcentrated, this being the source of the stripping steam.

When employing the method of direct injection of stripping steam it is necessary to preheat the solutizer to its boiling point before it enters the column, otherwise it becomes diluted by the condensation of some of the ascending steam. The temperature of the solutizer remains practically constant below the feed tray as it flows down the column. An increase of several degrees does occur, however, in the bottom two or three trays where it absorbs the superheat from the incoming steam. This method of stripping was only employed for a short period because of the following apparent objections. First, most steam sources are not absolutely free of carbon dioxide. The presence of traces of carbon dioxide in the steam would be cumulative in the solutizer and eventually consume its free alkalinity. Second, the aqueous condensate in the separator is saturated with mercaptans which must be stripped out before it is discharged or objectionable odors will exist in the treater area. Third, laboratory studies have shown the partial pressure of mercaptans to be greater over a dilute caustic solution than over a concentrated solution. This property favors having a dilute solution flowing down the column for the best stripping with a given amount of steam.

By the second method of regeneration, that is, by closed reboiling, the above objections are not encountered. Since the stripping steam is derived from the overhead aqueous condensate, it is free of carbon dioxide. All of this aqueous condensate is returned to the column as diluent and, therefore, other means of disposal are obviated. The advantage of diluting the solutizer before it flows down the column is evident from the curves in Fig. 6, which show comparative mercaptan sulfur profiles of the solution throughout the column when introducing the diluent at three different points and employing the same quantity of stripping steam. The diluent taken from the condensate accumulator contained 0.025 per cent by weight of mercaptan sulfur in each case. The mercaptan sulfur concentrations shown are computed on the basis of the undiluted spent solution and were obtained while sweetening a light cracked gasoline which contained 50 per cent butanes and 0.15 per cent by weight of mercaptan sulfur. In Run 1 the diluent and spent solution were both introduced on the same tray. Because of the reintroduction of mercaptans into the solution by the diluent the mercaptan concentration on the inlet tray was higher than that in the spent solution. In Run 2 the solution was not diluted until it entered the reboiler, where obviously most of the reduction in the mercaptan content occurred. In Run 3 the diluent was introduced into the column 10 trays above the solutizer inlet and was stripped free of mercaptans before it reached the solutizer. A smaller number of stripping trays were required to effect equivalent mercaptan reduction in the latter case. It was subsequently found that three stripping trays were sufficient to free the diluent of mercaptans. The runs were made in the above order which accounts for the variation in mercaptan content of the spent solution.

TABLE 3—EFFECT OF TREATING TEMPERATURE UPON SOLUTIZER RATIO REQUIRED FOR SWEETENING AND THE UNIT STEAM CONSUMPTION FOR REGENERATION

Kind of gasoline—	Mercaptan sulfur per cent by weight: Sour stock	Mercaptan sulfur per cent by weight: Raffinate	Treating temperature (°F.)	Ratio of solutizer to gasoline	Regenerating steam lb./bbl. gasoline
Blend of 400° F. end-point Mid-Continent and West Texas straightrun gasoline	0.02	0.0004	85	6.1:10	45
Blend of 400° F. end-point Mid-Continent and West Texas straightrun gasoline	0.02	0.0004	110	10:10	75
95°-250° F. cracked gasoline	0.04	0.0004	85	0.6:10	10
95°-250° F. cracked gasoline	0.04	0.0004	100	0.8:10	15

TABLE 4—SOLUBILITY OF GASOLINE IN SOLUTIZER SOLUTION AT 85° F.

Kind of gasoline—	Type of solutizer	Gasoline dissolved, per cent by volume of solutizer
400° F. end-point West Texas straightrun	6N KOH-3N KIB	0.50
400° F. end-point Mid-Continent straightrun	6N KOH-3N KIB	0.25
150°-400° F. cracked	5N KOH-1.8N KIB-1.1N KAP*	0.50
95°-250° F. cracked	6N KOH-3N KIB	0.35

*A "mixed" solutizer (potassium isobutyrate and alkyl phenolate) is used for sweetening cracked gasolines which contain alkyl phenols.

Regenerator Pressure

No advantage was observed by maintaining pressure on the regenerator. The extent of mercaptan reduction was found to be slightly less with 30-lb. gage pressure on the column than at atmospheric pressure. Higher pressures, of course, are accompanied by higher temperatures throughout the system. Hydrolysis of the mercaptides might be accelerated at higher temperatures but counterbalancing this is the effect of higher partial pressures of the mercaptans.

During most of the investigation the solution entering the column was preheated to 230° F. This could be accomplished by exchange with the overhead and the stripped solutizer solution from the reboiler. Higher temperatures apparently have no advantage. For example, while treating the light cracked fraction discussed under Fig. 4, the quantity of stripping steam required to produce a doctor-sweet raffinate was 18.0 and 18.8 lb. per bbl. of gasoline for preheat temperatures of 230° and 260° F., respectively.

The solution is pumped from the reboiler at its boiling point and its concentration is maintained constant by means of a temperature-recorder controller which actuates a diaphragm valve in the steam supply to the reboiler. For example, in order to increase the unit steam consumption the diluent is returned to the column at a faster rate which causes a more dilute solution to flow down the column and into the reboiler where the automatic temperature controller then supplies the additional amount of steam necessary to evaporate the excess diluent and to maintain the effluent solution at a constant boiling temperature and hence at a constant concentration.

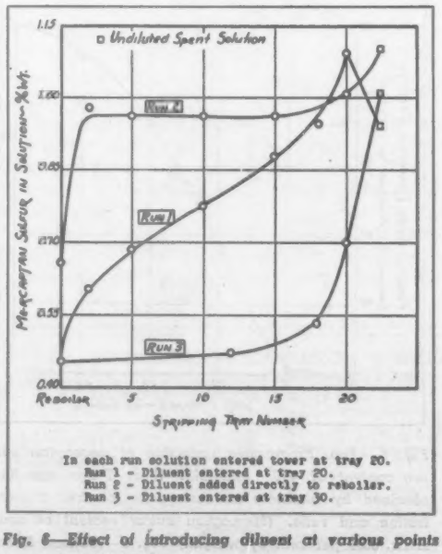


Fig. 6—Effect of introducing diluent at various points in regenerating column

In order to determine whether the solutizer is being stripped sufficiently to produce a doctor-sweet gasoline from the extractor, samples of the stripped solution are periodically shaken with mercaptan-free gasoline in the same proportion as employed in the extractor. If this contacted gasoline shows a definitely positive reaction to the doctor test, insufficient steam is being used. A definitely negative reaction, on the other hand, indicates excessive steam consumption. Familiarity with this simple test soon leads to the interpretation of border-line test results in terms of the minimum amount of steam required to produce a doctor-sweet raffinate. The only other control test for the regenerator operation is a periodic determination of the Baume gravity of the stripped solution which remains practically invariant at 39.3°-39.7° B. when the reboiler temperature is held constant at 270° F. at atmospheric pressure.

Number of Trays

Although the column was originally equipped with 30 stripping trays, early operation confirmed the theoretical analysis of Yabroff, White and Caselli[2e] that when employing the closed reboiling method of regeneration there is little if any advantage in the use of more than 10 trays. After having obtained numerous mercaptan sulfur profiles similar to that shown for Run 3 (Fig. 6) the upper section of the column was blinded off at tray No. 16, a new vapor nozzle installed on tray No. 15 and all subsequent operation carried out with the solution entering the column at tray No. 11 and the diluent at tray No. 15.

The reboiler was originally equipped with a low carbon-steel tube bundle which had a life of only 2 months. Photomicrographic analysis of the corroded tubes showed extensive intercrystalline attack and spalling of the loosened crystals. The tube bundle was replaced with a cupro-nickel alloy (70 per cent Cu, 390 per cent Ni) unit which after a year's service shows evidence of only very slight corrosion, equivalent to about 0.005-in. penetration per year, and its life is conservatively estimated at 6 years or more. There has been no observed corrosion in the reboiler shell. The steel tubes of the original stripped-solution cooler also showed traces of intercrystalline losses and this unit was replaced with Allegheny 33 stainless steel, which

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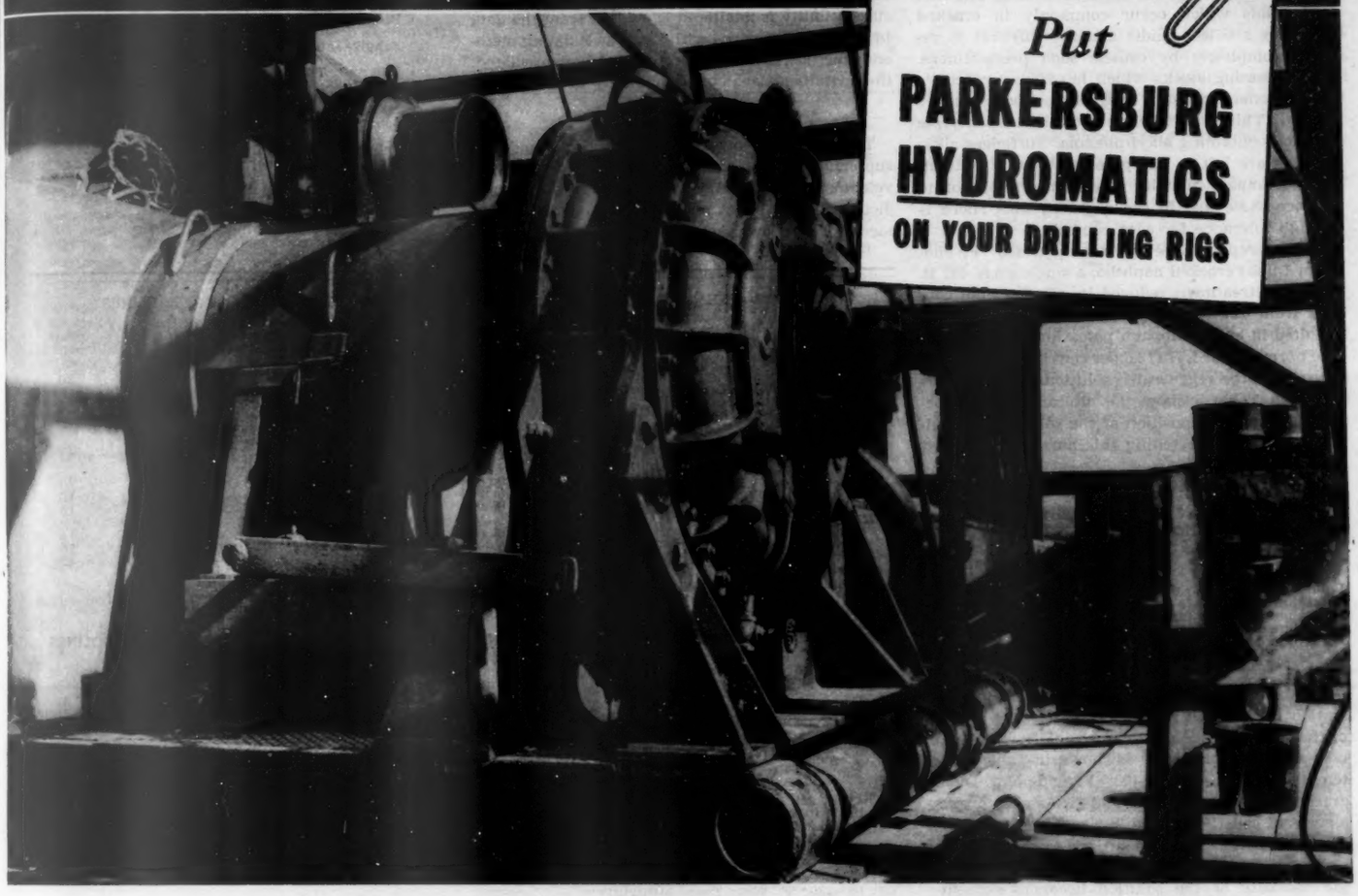

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remains perfectly smooth after a year's service. With the exception of a slight metal loss in the vapor line leading from the reboiler to the column, the remainder of the regenerator and extraction system shows no evidence of corrosion.

Treating Conditions for Various Gasolines

A solutized caustic solution extracts other acidic components from gasoline as well as mercaptans. Pretreatment with dilute caustic soda is necessary to remove hydrogen sulfide which would not be stripped out of the solutizer by steaming. Phenolic compounds which occur commonly in cracked naphthas are less acidic and are difficult to remove completely by caustic soda pretreatment. When treating stocks which have an appreciable alkyl phenol content, a so-called "mixed" solutizer is used. This is an alkaline potassium isobutyrate solution containing alkyl phenols. Sufficient alkyl phenols are left in the gasoline by the pretreatment to impart enough to the solutizer solution to balance those lost in the regeneration. There is enough tolerance for easy control.

For example, while sweetening a 400° F. end-point Dubbs cracked naphtha, a single-stage 40° B. NaOH pretreatment reduced its alkyl phenol content from 0.09 to 0.02 per cent by weight, which resulted in an equilibrium potassium alkyl phenolate normality of 1.37 (13.6 per cent by weight alkyl phenol) in the regenerated solution. The analyses given in Table 5 show the alteration which occurred in the composition of the solutizer at equilibrium while sweetening this particular cracked naphtha.

TABLE 5—TYPICAL ANALYSIS OF SOLUTIZER FOR SWEETENING CRACKED NAPHTHA CONTAINING ALKYL PHENOLS

Components—	Normalities: Original solution	Normalities: Equilibrium solution
Potassium hydroxide (KOH)	5.00	4.57
Potassium isobutyrate (KIB)	1.81	1.80
Potassium alkyl phenolate (KAP)	1.12	1.37
Potassium mercaptide (KSR)	...	0.05
Potassium carbonate (K_2CO_3)	0.40	0.52
	8.33	8.31

The highest permissible alkyl phenolate concentration in the solutizer is limited by the viscosity of the solution which increases rapidly with increments of alkyl phenolate as shown in Table 6. Attempts to pretreat the 400° F. end-point Dubbs cracked naphtha with one and two stages of only 5 per cent caustic resulted in a rapid accumulation of alkyl phenols in the solutizer accompanied by viscosity increments of impractical magnitude. If the viscosity of the solution becomes excessive because of insufficient pretreatment, the desired alkyl phenolate concentration can be regained by employing more stripping steam.

TABLE 6—VARIATION IN VISCOSITY OF KOH-KIB-KAP SOLUTIZER WITH INCREMENTS IN ALKYL PHENOLATE CONTENT

Alkyl phenol concentration, per cent by weight—	Absolute viscosity at 100° F., centipoises
13	24
17	56
22	118

Gasolines are, therefore, divided into two groups for solutizer treatment. Those containing alkyl phenols require a mixed KOH-KIB-KAP solutizer and those free of phenolic material may be treated with a straight KOH-KIB solutizer. The heavier cracked gasolines fall in the former group and most straightrun and low-boiling-range cracked gasolines in the latter. The conditions under which a variety of gasolines were sweetened on the pilot plant are shown in Table 7. This was accomplished without affecting the color, gum or volatility characteristics.

The most outstanding characteristic of solutizer-sweetened gasolines is that they have, in general, a higher octane number and better lead susceptibility than the sour stock by virtue of the elimination of the proknock mercaptans.[3a] This is illustrated by the data in Tables 8 and 9 obtained from pilot-plant sweetened gasolines. In every case the octane number of the sweet, unleaded gasoline was as high or higher than that of the sour stock. With the exception of Item 3, which contained only 0.005 per cent mercaptan sulfur in the sour stock, a very attractive increase in lead susceptibility was observed. The greatest improvement was noted in Item 1, which is exemplary of an aviation blending stock and in which the mercaptan sulfur represented 86.5 per cent of the total sulfur in the sour material. The superiority of solutizer sweetening over those sweetening methods in which the lead susceptibility is unaltered is evident from the data in Table 9. Compared with usual sweetening methods whereby the lead susceptibility is depreciated, the advantages are correspondingly greater.

Conclusion

The pilot-plant investigation has confirmed and supplemented the laboratory and theoretical development of the process to the extent that predicted treating ratios and stripping-steam requirements of unknown gasolines, obtained by use of a glass multistage laboratory treater and formulas derived by Yabroff and collaborators, are considered to be reliable for practical purposes.

The first commercial-scale solutizer treating plant was placed in operation at the Wood River refinery of Shell Oil Co., Inc., on May 17, 1940. Performance of this unit has been quite satisfactory.

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TABLE 7—TREATING CONDITIONS FOR SWEETENING VARIOUS TYPES OF GASOLINES

Item No.	Gasoline—	Mercaptan sulfur—weight per cent: Untreated	Mercaptan sulfur—weight per cent: Treated	Kind of solutizer*	Treating temperature, °F.	Parts solutizer to 10 parts gasoline	Stripping steam, lb. per bbl. gasoline
1.	95°-200° F. mixed straightrun	0.065	0.0004	KOH-KIB	85	1.0	20
2.	Full-range West Texas straightrun	0.050	0.0004	KOH-KIB	85	7.5	55
3.	Full-range Mid-Continent straightrun	0.005	0.0004	KOH-KIB	85	2.0	23
4.	1:1 Blend Items 2 and 3	0.025	0.0004	KOH-KIB	85	6.1	45
5.	Same as Item 4	0.025	0.0004	KOH-KIB	110	10.0	75
6.	95°-260° F. West Texas straightrun	0.035	0.0004	KOH-KIB	85	2.0	20
7.	95°-250° F. cracked	0.040	0.0004	KOH-KIB	85	0.6	10
8.	Same as Item 7	0.040	0.0004	KOH-KIB	100	0.8	15
9.	1 part Item 7, 1 part butanes-butylenes	0.150	0.0004	KOH-KIB	85	.05	14
10.	Reformed (unstabilized)	0.015	0.0004	KOH-KIB	100	1.25	15
11.	150°-400° F. Dubbs cracked	0.025	0.0004	KOH-KIB-KAP	85	3.3	42

*Representative composition shown in Tables 1 and 5.
Note: Data from packed-tower extraction in all cases except Items 1 and 9 which were treated in mixer-settler equipment only.

TABLE 8—EFFECT OF SOLUTIZER TREATMENT ON OCTANE NUMBER OF VARIOUS TYPES OF GASOLINES
(Compared with sour stock)

Item No.	Type of gasoline‡—	Sulfur content %W*: Mercaptan	Sulfur content %W*: Total	% sulfur reduction by solutizer	A.S.T.M. octane numbers: Unleaded	+1 ml. tetraethyl lead	+2 mls. tetraethyl lead	+3 mls. tetraethyl lead
1	95°-200° F. mixed straightrun:							
	Sour	0.065	0.075		72.6	79.5	83.0	85.5
	Sweet	0.0004	0.010	86.5	73.3	81.8	85.0	88.0
2	Full-range West Texas straightrun:							
	Sour	0.050	0.150		53.5	61.5	66.0	69.5
	Sweet	0.0004	0.100	33.3	53.8	62.5	67.5	71.0
3	Full-range Mid-Continent straightrun:							
	Sour	0.005	0.020		50.0	61.5	69.0	73.0
	Sweet	0.0004	0.015	25.0	50.0	61.5	69.5	73.0
4	1:1 blend Items 2 and 3:							
	Sour	0.025	0.085		51.5	61.8	67.0	70.2
	Sweet	0.0004	0.060	29.4	52.0	62.5	67.7	71.0
6	95°-260° F. West Texas straightrun:							
	Sour	0.035	0.045		71.6	78.3	81.8	84.4
	Sweet	0.0004	0.020	55.5	71.9	79.1	83.3	85.6
7	95-250° F. cracked:							
	Sour	0.040	0.075		77.5	80.4	82.0	83.0
	Sweet	0.0004	0.035	53.4	77.5	81.2	83.2	84.5
10	Reformed (unstab.):							
	Sour	0.015	0.080		72.0	76.6	79.1	80.8
	Sweet	0.0004	0.065	18.8	72.0	76.9	79.2	81.1
11	†150°-400° F. Dubbs cracked:							
	Sour	0.025	0.150		67.8	74.0	76.7	78.7
	Sweet	0.0004	0.125	16.7	68.8	75.3	78.3	79.8

*Mercaptan sulfur determined by potentiometric titration with standard silver nitrate solution. Total sulfur by A.S.T.M. Lamp Sulfur Method D90-34T.
†Only stock requiring a "mixed" (KOH-KIB-KAP) solutizer.
‡Same as Table 7.

TABLE 9—EFFECT OF SOLUTIZER TREATMENT ON LEAD REQUIREMENT OF VARIOUS TYPES OF GASOLINE
(Compared with sour stock)

Item No. same as Table 8		Milliliters TEL to following A.S.T.M. octane numbers: 65	70	75	80	Reduction in TEL costs compared to sour stock, Dollars per 1,000 bbl.*: A.S.T.M. octane number of leaded gasoline 65	70	75	80
1.	Sour	..	...	0.17	0.88				
1.	Sweet	..	...	0.10	0.57	....	....	7.35	32.60
2.	Sour	1.60	3.20	6.00	>6.00				
2.	Sweet	1.35	2.70	5.00	>6.00	26.25	52.50	105.00	....
3.	Sour	1.30	2.19	3.70	6.00				
3.	Sweet	1.30	2.19	3.70	6.00	None	None	None	None
4.	Sour	1.55	2.90	5.10	>6.00				
4.	Sweet	1.44	2.70	4.75	>6.00	11.55	21.00	36.80	....
6.	Sour	...	...	0.28	1.16				
6.	Sweet	..	...	0.23	0.95	....	....	5.25	22.00
7.	Sour	...	...	...	0.56				
7.	Sweet	...	...	...	0.48	....	....	....	8.40
10.	Sour	..	...	0.44	2.35				
10.	Sweet	..	...	0.40	2.10	....	....	4.20	26.25
11.	Sour	...	0.22	1.34	3.90				
11.	Sweet	...	0.10	0.93	2.85	....	12.60	42.10	110.10

*Tetraethyl lead at 0.25 cent per milliliter.

Electrifying Oil Properties and Service Restoration Systems

By ORVILLE DOWZER
Dowzer Construction Co.

In the electrification of oil-field properties several factors must be considered in determining whether the power is to be purchased or privately generated. These factors, methods of installing secondary circuits and means of restoring service are discussed.

PRIOR to the first World War, the oil industry itself was in the "wildcatting" era but shortly after the war scientists and engineers entered the industry, and through the research departments of major producing companies and concerns closely related to the industry, began the development of methods and equipment in an effort to reduce the costs in connection with the production of petroleum products. Engineers with dynameters, watt-hour meters, indicators and other gadgets which serve as the tools of a research man, aided in the creation of methods and equipment which would serve the industry more economically and efficiently.

Electrification of oil-field properties followed somewhat the same course as did the electrification used for illumination of communities. Further development in design of equipment and the subsequent expansion of electric-power facilities, led to the application of the electric motor as a prime mover. Other factors which contributed to the adoption of electricity as a source of power were the necessity for continuity of operation, lack of fuel for gas-driven engines, and the necessity, because of keen competition to reduce labor and maintenance costs.

There are two methods by which the operating company may obtain electric power; first, the installation of private generating stations, and second, purchase power from an electric-service company operating in the area to be served. In many cases the location of a field under development will be several miles from an existing source of power. This, of course, would necessitate the construction of an electric-transmission line, the cost of which would have to be borne by either the producing company or the utility company. It is customary, for the seller of electric power to ask for a guaranteed monthly revenue for a period of 3 to 5 years, which will, in that length of time retire their investment.

In many cases the oil-field property to be served is so isolated that construction of transmission lines is economically unsound. In other instances the guaranteed minimum charge for purchased power, plus the kilowatt-hour rate is considered high enough to make the private plant more economical. Another consideration between these two methods is that of plant capacity. If the producing company can definitely determine, prior to initial installation, the maximum amount of energy required for the property, an original installation can be made without necessity of addition. The producing companies have been prone to underestimate the capacities required for an expanding of field property with the result that they are continually making additions to their plant equipment.

In the operation of a privately operated generating station, providing of course the load warrents, standby generating units are needed to guarantee continuity of service.

During the past few years the central lease power plant or skid unit for the purpose of generating current to serve 15 or 20 motor-driven pumping units has become quite popular. These units usually consist of small gas or diesel engine-driven generators equipped with automatic governors and switches generating at 440 volts. The power from this unit is distributed on a 440-volt overhead secondary line direct from the generator to the motor, no transformers being required. It is customary, however, to install a small 440-volt to 110-volt transformer for lighting purposes. These systems have been highly successful in operation and have proved to be economical. A system of this kind can be operated by two men per shift, which allows ample man power for both pumping and generating.

From the purely economical side, purchased power for long-term operation should prove to be the most desirable method for the producing company. This, of course, depends upon the establishment of equitable rates and low demand charges.

Transmission

The type, capacity and method of transmitting power depends upon the proposed development of the property to be served. Location of the wells the amount of acreage and the location of the acreage all serve as a guide to the design of the

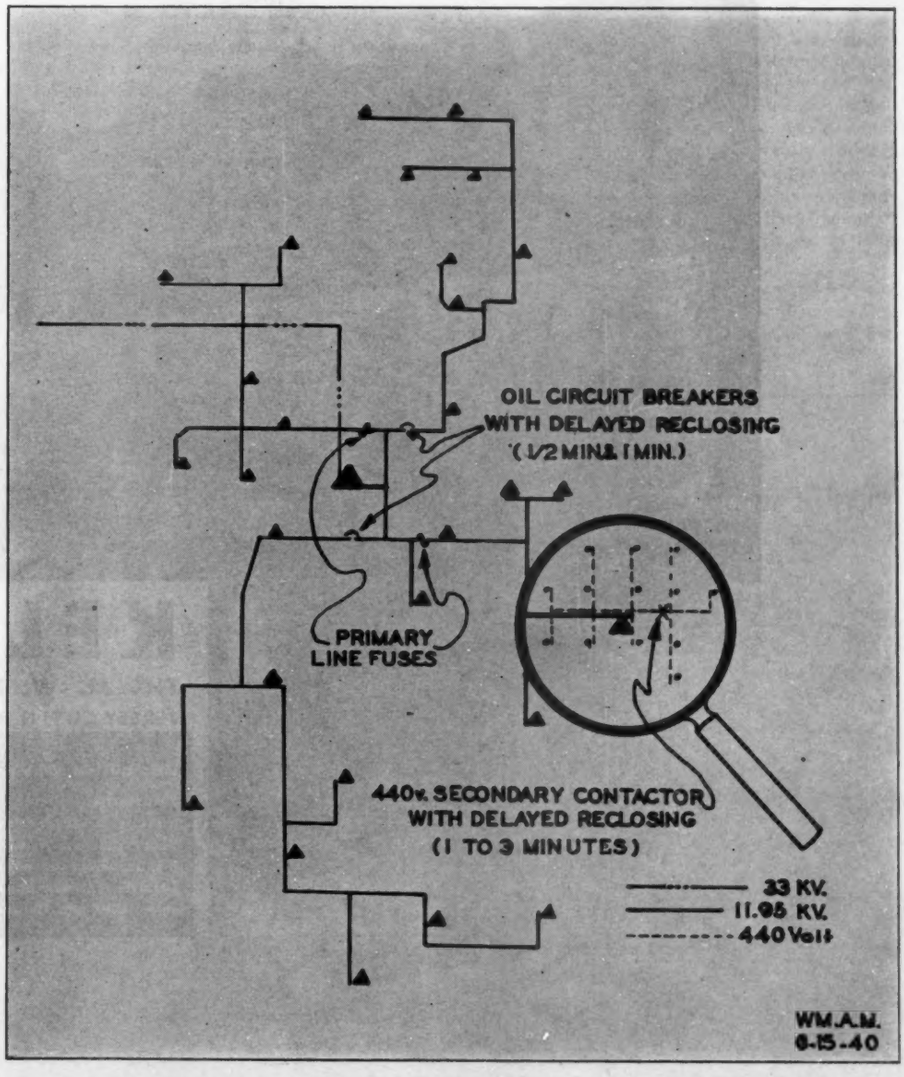

Diagram showing location of primary fuses; circuit breakers and contactor with delayed reclosings

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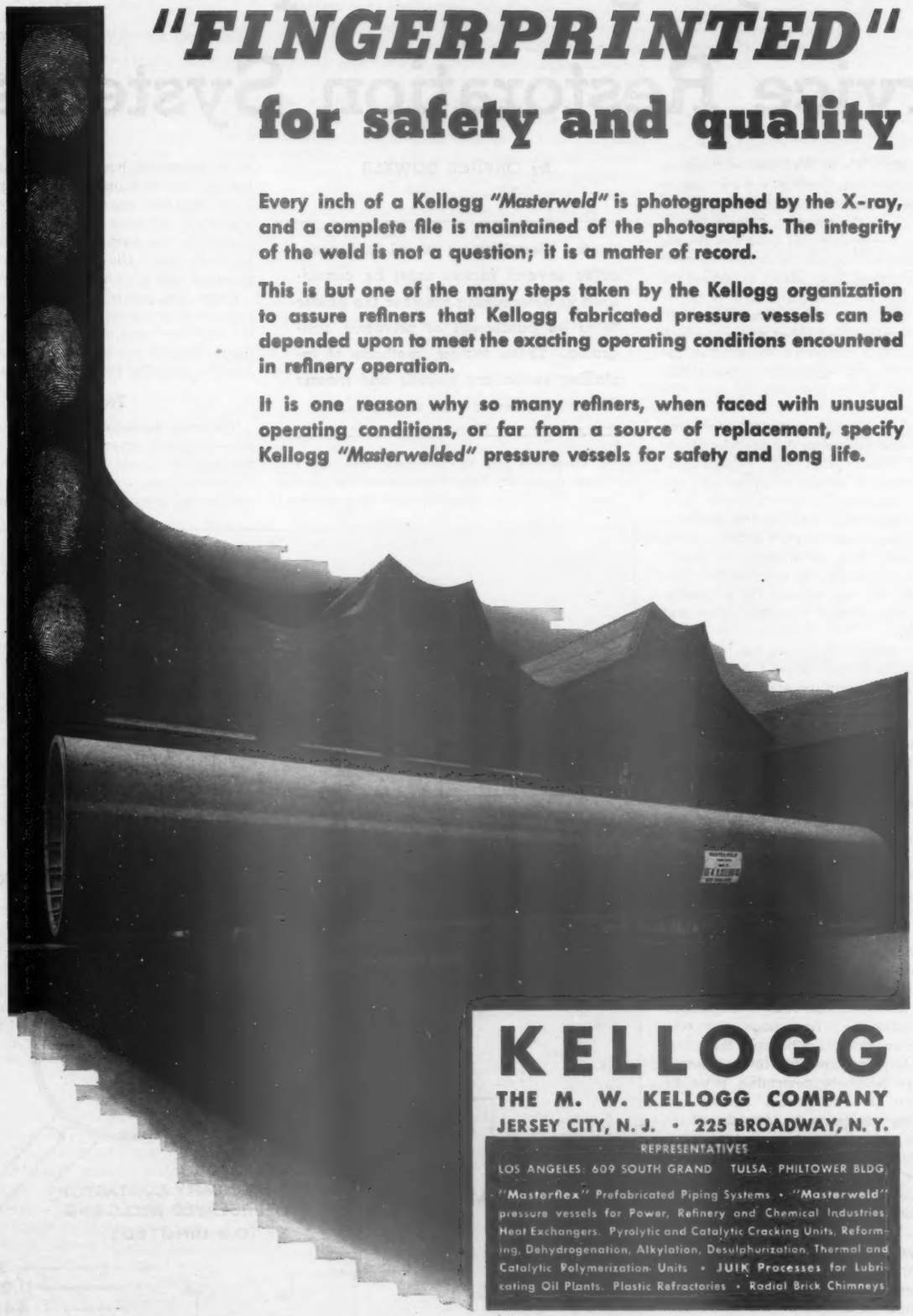
This is but one of the many steps taken by the Kellogg organization to assure refiners that Kellogg fabricated pressure vessels can be depended upon to meet the exacting operating conditions encountered in refinery operation.

It is one reason why so many refiners, when faced with unusual operating conditions, or far from a source of replacement, specify Kellogg *"Masterwelded"* pressure vessels for safety and long life.



KELLOGG

THE M. W. KELLOGG COMPANY

JERSEY CITY, N. J. • 225 BROADWAY, N. Y.

REPRESENTATIVES

LOS ANGELES: 609 SOUTH GRAND TULSA: PHILTOWER BLDG.

"Masterflex" Prefabricated Piping Systems • "Masterweld" pressure vessels for Power, Refinery and Chemical Industries; Heat Exchangers. Pyrolytic and Catalytic Cracking Units, Reforming, Dehydrogenation, Alkylation, Desulphurization, Thermal and Catalytic Polymerization Units • JUIK Processes for Lubricating Oil Plants. Plastic Refractories • Radial Brick Chimneys.

distributing system. A solid block of acreage permits a systematic layout of distributing lines from one power source and allows the use of one primary line with laterals congealed in a solid network. It also eliminates the necessity of crossing foreign property and of duplication of the transmission system. It is possible, however, to use this system of one main primary on adjoining acreages, the main primary circuit being laid out to conform to the property lines.

In some states drilling locations are limited to 10-acre sites. Such a rule lends itself to the design of a compact distribution system. Assume that an 80-acre tract is to be served, a main primary feeder may be installed through the center of the lease, with a substation location in the load center, with secondary circuits installed as an undercircuit on the primary poles, with service drops to the left and to the right to serve eight wells. This scheme was followed in making our original survey of the Lake Centralia and Salem, Illinois, pools in 1939. We, of course, found it necessary to modify and adjust this design materially to meet the requirements of offset drilling, etc.

The chief concern, however, is to obtain the maximum number of services from the least possible amount of transmission line for the area to be served. The usual method is to pick up the energy at the power source, transmitting 6,900 or 11,500 volts on the primary lines, locating substations in the load centers of given areas and distributing 440 volts from the substation to the well pumping units. The substation must be located so the distribution lines will carry the energy with a minimum of voltage drop. It follows that the capacity of the substation is determined by the connected load.

Secondary Circuits

There are several methods of installing services from secondary circuits to the motor. The commonplace overhead service drop from a secondary pole to a connection adjacent to the well is the most economical installation. Underground service may be made with the use of rubber-covered wire enclosed in conduit or by the use of three-conductor parkway cable.

There are various types of motor-control equipment available for motors used on oil-well pumping units. A few years ago it was standard practice to erect a house enclosing the prime mover of the unit. At that time it was necessary to protect motors and other moving parts from the weather, consequently control equipment was installed on a board within the pump house. This equipment consisted, usually, of a fusible safety switch, starting switch, meters and protective devices. Concurrently with the desire and acceptance of the splashproof motor there has been developed motor-control units comprised of safety switch, starting-switch meters, lightning arresters and time clocks, all enclosed in one weatherproof box. These controls can be mounted on a pole or rack near the pumping unit without additional housing.

The installation of an average 6,900-volt or 11,500-volt transmission line with 440-volt distribution system for oil-well pumping units, including substations but not including controls or motors, will cost between $300 and $500 per well. Services and motor-control costs are based upon the horsepower of the motor to be served. Installations for serving up to 7½-hp. units will cost approximately $150 per well. Units from 7½ to 25-hp., $260 per well. Roughly, therefore, your cost excluding motors on 7½-hp. units would approximate $450 per well. These figures serve merely as a guide in making preliminary estimates.

The variable rates make it impractical to quote in terms of dollars and cents the cost of raising a barrel of oil by electric power. It is practical, however, to translate this cost into kilowatt-hour consumption per barrel.

We recently made a survey of some 80 wells in central Kansas, all of which were located in the same pool. Depth around 3,500 ft., varying degrees of gas pressure, using 25-hp. motors, the average consumption based upon oil produced and not in total fluid lifted was 0.48 kw.-hr. per barrel. Assuming that you are buying power or generating your own at 1½ cents per kw.-hr., energy cost would be 0.0072 cent per barrel. These wells are under proration and it necessarily follows that considerable current is wasted due to additional starting current consumed. In the Centralia, Illinois, district 62 wells using 3 and 5-hp. motors, depth 1,300 ft., show an average consumption of 0.5 kw.-hr. per barrel. In the Louden district 23 wells using 5-hp. motors, depth 1,550 ft., show an average consumption of 0.41 kw.-hr. per barrel of oil.

These consumption figures are almost parallel to each other and come from widely separated districts. Therefore, it is safe to assume that consumption will run between 0.4 to 0.7 kw.-hr. per barrel of oil.

Other costs chargeable to lifting are maintenance and labor. Maintenance costs on electrical equipment is low. In the matter of labor expense fewer pumpers are needed when units are equipped with motor drive.

Service Restoration

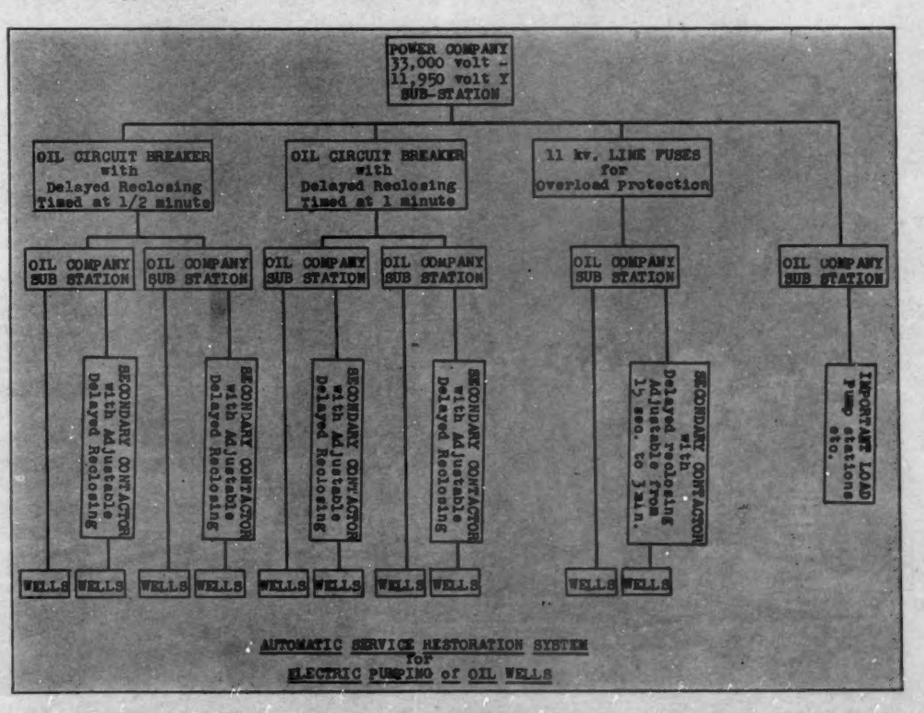
Where the entire load consists of electric motors on any distribution system the matter of service restoration after an outage presents a difficult problem. This is brought about by the fact that the starting current of a motor is from three to five times its normal full-load running current. Practically all distribution systems are designed to handle the full-load current of all the motors on it but are not designed to handle a load when all the motors are started at one time, since the plant or system capacity required for such service would involve prohibitive investments. The problem of restoring service has been handled in several ways, each of which gives satisfactory results. One, by the application of corrective measures to each individual well; two, application of corrective measures to small groups of wells located in the same area; and three, corrective measures as applied to large distribution systems. In selecting equipment to take care of this service restoration problem it is necessary to compare the cost of the equipment required for the various methods.

Naturally, the method requiring the least investment would be to visit each well after a shutdown and open every main switch, with the reenergizing of the system another trip would have to be made to each individual motor to restart it. This method if unsatisfactory, since it requires a great deal of labor and results in longer interruption and consequent loss in production. The next best measure for individual correction is to install an undervoltage release coil on the motor-starting equipment that will shut down the motor when the voltage fails, or the power goes off, which will not reclose and allow the motor to restart when the system is reenergized. In this case, each motor must be visited to restart it, but we have eliminated at least half of the down time which was involved in the former method.

The third and most expensive method of service restoration as applied to individual motors, is to install an undervoltage coil as mentioned above, which will cause all motors to be automatically disconnected from the line in the case of a service interruption. To the motor-control equipment in this case is also added an automatic time switch, which will automatically restart the motor with delayed time. The time delay in these units is adjustable so that it may be set to start any given number of motors consecutively in 10 to 15 second intervals. This is the most elaborate method, but by using this system at least 30 wells could be put on the line in at least 300 seconds, which would be only 5 minutes. Compare this with the first method described, which would require at least 5 minutes per well, or a total of 2½ hours for putting the wells on the line and a like amount of time for disconnecting them, which would total 5 hours.

Costs involved for special equipment: For the first method, no additional cost as all operations are manual; second method, with undervoltage

(Continued on Page 46)


POWER COMPANY
33,000 volt -
11,950 volt Y
SUB-STATION
OIL CIRCUIT BREAKER with Delayed Reclosing Timed at 1/2 minute
OIL CIRCUIT BREAKER with Delayed Reclosing Timed at 1 minute
11 kv. LINE FUSES for Overload Protection
OIL COMPANY SUB STATION
OIL COMPANY SUB STATION
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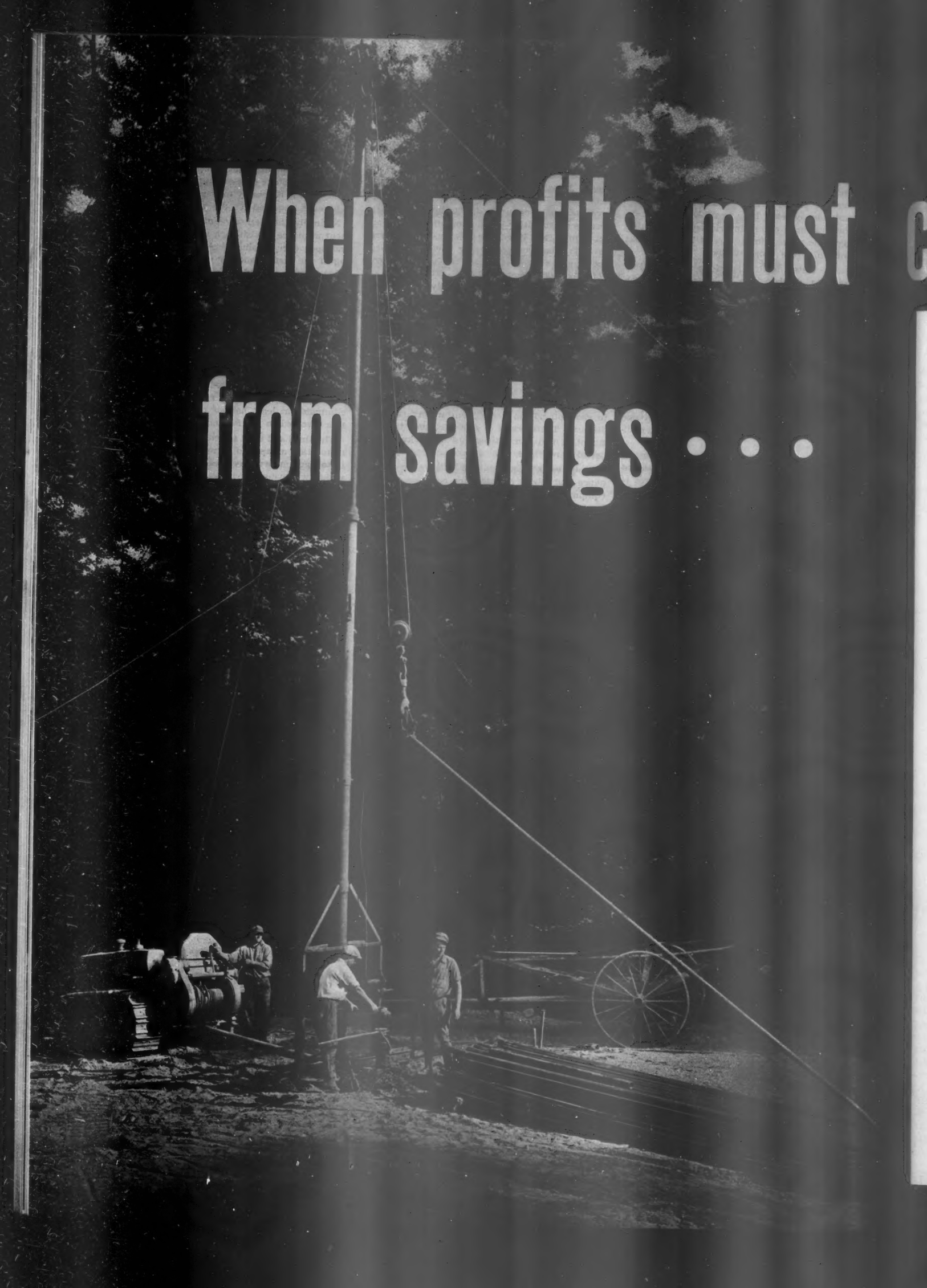
OIL COMPANY SUB STATION
SECONDARY CONTACTOR with Adjustable Delayed Reclosing
SECONDARY CONTACTOR with Adjustable Delayed Reclosing
SECONDARY CONTACTOR with Adjustable Delayed Reclosing
SECONDARY CONTACTOR with Adjustable Delayed Reclosing
SECONDARY CONTACTOR with Delayed Reclosing Adjustable from 1½ sec. to 3 min.
IMPORTANT LOAD Pump stations etc.
WELLS
AUTOMATIC SERVICE RESTORATION SYSTEM for ELECTRIC PUMPING of OIL WELLS

Current distribution and location of circuit breakers, and secondary contactors in a service-restoration system


When profits must c
from savings . . .

come

IN EVERY FIELD or lease there comes a time when production slackens and ingenuity in cutting down operating costs must help to maintain a paying rate of profit. That is when you begin to realize fully the money-*saving* as well as the money-*making* capacity of "Caterpillar" Diesel equipment.

Take the tractors. . . . The natural economies they offer through their long-lived construction, their strong and dependable power, their low maintenance, and their decisively low fuel cost are widely recognized and proved.

But it is also their versatility for doing *many things* that often keeps a low-production operation "in the gravy"—or enables the opening of many a hard-to-get-at location which otherwise might not be worth the risk.

Road building, through thickets or mountains—rig-site leveling—equipment moving and spotting—supplies hauling—well servicing are some of the things "Caterpillar" Diesel Tractors do, quickly and *economically*, which ordinarily would be comparatively expensive and laborious.

By making PROFITS THROUGH SAVINGS, "Caterpillar" Diesels take less of your production profits!

CATERPILLAR TRACTOR CO., PEORIA, ILL.

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← **WELL SERVICING**—*A "Caterpillar" Diesel D4 Tractor with Hyster winch on typical Appalachian location near Olean, N. Y. Altitude, 2000 feet. Works 8 hours a day.*

↑ **EQUIPMENT MOVING**—*A "Caterpillar" Diesel D4 Tractor hauling oil-field equipment through hilly forest (Pennsylvania). Uses only 68c worth of fuel in 15 hours of operation.*

↑ **ROAD BUILDING**—*A "Caterpillar" Diesel D4 Tractor with Hyster winch and LaPlant-Choate trailbuilder roughing out road through woods. Also used to clear well sites.*

TRACK-TYPE TRACTORS · ROAD MACHINERY · DIESEL ENGINES AND ELECTRIC SETS

relay, around $10 per unit, and for the third method about $40 per unit to include the undervoltage relay and the automatic timing device.

In order to apply corrective measures for service restoration to small groups of wells located in the same area and in general on the same secondary lateral, information must first be available as to how many units or motors on the entire system may be started at one time without overloading the generating plant or blowing a primary fuse on a substation, to which this group of motors are attached. The system should then be divided into a number of areas, each area to include no more than the maximum number of units than can safely be started at any one time on the system under consideration. At certain points in the secondary system as divides the above-mentioned areas, switches are installed so that they may be operated either manually or automatically so as to open or close the system at these points. With manual switches installed on this type of system, to restore service each switch must be visited and manually opened. After the system has been reenergized another visit to each switch will allow the system to again be picked up within a reasonable length of time.

An interesting solution of a complicated service restoration problem in the Lake Centralia, Illinois, field has recently been worked out and is now in operation. This system consists of four separate 6,900-volt lines feeding from a 33,000 to 6,900-volt substation with a capacity of 2,500 kva. The connected load on this system was around 2,000 hp. and so distributed that one 6,900-volt line served 1,000 hp., another such line served 600 hp., and the third and fourth lines together served 400 hp. In the even that there was a power interruption of a very short duration on this system the motors would, of course, all come to a standstill. Perhaps the power would be restored in 30 seconds, but if all the motors had stopped the energy required to restart them would be approximately four times full load or around 8,000 hp.

This tremendous drain on the central substation would consequently blow a fuse and again shut down the entire field. Before this fuse could be replaced, at least two-thirds of the load had to be disconnected from the substation by opening two switches feeding the 600-hp. and the 1,000-hp. lines. After the central substation fuse had been replaced it was not necessary to return and reclose these two line switches. Load was being continually added to all lines making it increasingly difficult to restore service to each line individually. Many unnecessary interruptions were experienced and the time involved in service restoration resulted in enormous production losses.

Secondary Switches

To correct this difficulty, a high-voltage automatic switch with overload protection and automatic delayed-time reclosing devices was installed on the lines serving the 1,000 and 600-hp. loads. The other two lines serving a combined load of 400 hp. were not changed except for the installation of a set of high-voltage fuses in each, 16 automatic secondary switches were installed at selected points on the system that also were equipped with time-delayed reclosing devices capable of servicing a 50-hp. load each. These secondary switches represent a combined capacity of 800 hp. and are so located as to pick up 600 hp. of the load on the 1,000-hp. primary line and 200 hp. on the 600-hp. line.

Let us assume that there was a current interruption on the central substation of 15 seconds, which would allow all motors to come to a complete standstill. Fifteen seconds after power is restored the two lines serving 400 hp. in combination are immediately energized and are started without difficulty. The high-voltage automatic switch on the 1,000-hp. line opened automatically with the failure of the power 15 seconds before and the automatic time is set for it to reclose 30 seconds after power is restored to it, which is 45 seconds after the original power failure.

We will assume that this switch recloses on scheduled time and would then restore service to 1,000 hp., except that you will remember that 600 hp. of this load was taken care of by 12 50-hp. automatic switches which have also opened with the power failure. These 12 switches then close automatically, one at a time in 15-second intervals, which would require a complete pickup time of 3 minutes after the closing of the high-voltage automatic switch ahead of them. This means that the last one would close 3 minutes and 45 seconds after the original outage.

Going back to the second high-voltage automatic switch, we will assume that it has been set to reclose 1 minute after service restoration to the substation, which would be 1 minute and 15 seconds after the original outage. This is the line serving 600 hp. and having 200 hp. of its load served by automatic secondary switches. All of these switches have opened with the voltage failure, and the first one is set to close 15 seconds after service restoration to the high-voltage switch ahead of it, the other three 50-hp. switches to close in 15-second intervals thereafter, making the total elapsed time for restoring the load on this line 2 minutes 15 seconds after service is resumed.

Thus in less than 4 minutes, the entire load has been smoothly picked up in maximum increments of no more than 450 hp. By further staggering of the time increments, this maximum load to be picked up at one time could be reduced. As more motors are added to respective areas, additional secondary automatic switches can be added to further cushion the service restoration.

In the case of a fault on either of the two lines carrying the combined 400-hp. load, the high-voltage fuses installed in these lines will blow and clear the trouble, thereby allowing the remainder of the system to operate in the clear. In the event of trouble on either of the lines served by the high-voltage automatic switches, the overload relays installed therein instantly open these switches and likewise clear them from the rest of the system.

Should additional loads be added to a small area now served by one of the secondary automatic switches so that its present capacity of 50 hp. be exceeded, the additional motors can be equipped with individual undervoltage release coils that will open with voltage failure but will have to be manually reclosed with service restoration. At present it is not contemplated that there will be any such units, but in the event that there is, this allows a method of further development.

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Petroleum Products and Bituminous Materials at A. S. T. M. Meeting

At the forty-third annual meeting of the American Society for Testing Materials, held in Atlantic City, N. J., June 24 to 28, five committee reports and four technical sessions comprised the session devoted to petroleum products, bituminous materials, road materials and soils.

A rather extensive report was submitted by Committee D-2 on Petroleum Products and Lubricants including a number of important recommendations, three of which were new tentative standards covering the following: Test for carbonizable substances in white mineral oil (liquid petrolatum), test for dropping point of lubricating grease, and method of calculating viscosity index. The first-named item is applicable to white mineral oil to ascertain whether it conforms to the standard of quality prescribed by the U. S. Pharmacopoeia. The tables and equations included in the new method of calculating viscosity index provide a means for calculating the viscosity index of a petroleum product or lubricant from its viscosity at 100° and 210° F.

In connection with the work on aniline point, the subcommittee in charge prepared a proposed method of test which is published as part of the report as information only. No action has been taken to refer it to the society for approval. In 1938 there was published in connection with the committee report proposed methods of test for ignition quality of diesel fuels and classification of diesel fuel oils. Because of revisions which have been developed, these two items are again published as information.

A number of other recommendations by Committee D-2 were approved including revisions of some nine standards and tentative standards, these being listed in the committee's report. Two items are to be referred to the society letter ballot for adoption as standard: namely, test for unsulfonated residue of plant spray oils (D483-38T) and specifications for Stoddard solvent (D484-38T).

Carl Bussow, A. W. Dow, Inc., in his paper on "A Study of the Recovery of the Bitumen From Soft Asphalt Cements by the Bussow Method," said that with an increasing number of state specifications requiring the extraction and recovery of the asphalt from paving mixtures in order to control the physical properties of the asphalt actually in the pavement, a simple and reliable method for the recovery of the extracted asphalt should be available. The Bussow method is described in the paper and compared with the Abson method.

Messrs. R. N. Traxler, H. E. Schweyer, and J. W. Romberg, of the Texas Co., in their paper on "Rheological Interpretation of Asphalt Tests" conclude that with the exception of the ring and ball softening-point test for certain asphalts, the empirical flow tests in common use cannot be used to evaluate the flow properties in absolute units with any degree of precision, and that substitution of rheological methods for these empirical tests would simplify laboratory testing for both consumer and producer since less complicated specifications would be necessary. For example, the use of three or four measurements of viscosity over the range from service to application temperatures would determine the effect of temperature on flow properties.

T. F. Ford and K. G. Arabian, of the Shell Development Co., discussed "The Measurement of the Deformation Properties of Asphalts" describing a new type of instrument of the rotating-cylinder-viscosimeter type designed for routine use. Results obtained using this instrument compare favorably with results obtained using a more elaborate conicylindrical viscosimeter. Since a single deformation constant such as viscosity is inadequate to describe the flow of plastic asphalts, three deformation constants are evaluated: a coefficient of viscosity n, a coefficient of elasticity in shear g, and a coefficient of internal slip s. The values of these constants are found to be relatively independent of the driving load, for the asphalts and other plastic materials tested.

QUESTIONS ON TECHNOLOGY

By W. L. NELSON, TECHNICAL EDITOR

W. L. NELSON

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to W. L. Nelson, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists, and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible. Inquiries must be signed but only the given initials will be printed. The source of the question is considered to be confidential.

Questions requiring a discussion of patents, extended computations, or a detailed study cannot be considered. When the matter is of general interest, a reply will be published within a reasonable time.

Practical Price of Coal Compared With Fuel Oil

I should like to know what is the practical ratio between the price of coal and of fuel oil which makes it worth while for users of coal to replace it by fuel oil, both for heating and industrial purposes?—C. I. C.

The practicality of substituting fuel oil for coal is a difficult question because of the many factors that are peculiar to each situation and is a question that cannot be definitely answered without a consideration of the particular situation. Some of the advantages of fuel oil over coal which in some instances can be credited as an actual dollars-and-cents saving are: ease in handling, freedom from ash (office buildings, manufacturing or railroads), flexibility of heating, accurate temperature control, and a relatively small storage-space requirement.

From a standpoint of heating value, about 3.25 bbl. of fuel oil is equivalent to 1 ton of average bituminous coal, or about 4 bbl. of oil is equivalent to 1 ton of a high-grade stoker coal. Depending upon the advantages of oil as mentioned above, the amount of fuel oil that is equivalent to a ton of coal can be reduced downward but in few instances more than 10 to 15 per cent. Thus, with oil at 70 cents per barrel, the maximum cost of coal should not exceed $2 to $2.80 per ton.

Specification of Dry-Cleaning Naphtha

We hear that a new specification for dry-cleaners solvent is being used. What are the details of this specification?—K. V. H.

You probably refer to the third edition of Commercial Standard CS3-40 entitled "Stoddard Solvent" (dry cleaning) which has been proposed for use after June 20, 1940, by the National Bureau of Standards. Reading from this circular:

"On December 2, 1927, at the instance of the National Association of Dyers and Cleaners, a general conference of manufacturers, distributors, and users of Stoddard solvent accepted a recommended commercial standard, which was later accepted by the industry and became effective March 1, 1928. The success of the standard and improvements in manufacturing processes during succeeding years led the standing committee to recommend a revision which was accepted by those concerned and promulgated as CS3-38. On April 19, 1940, a second revision, to incorporate certain refinements of test methods recommended by the standing committee, was circulated for acceptance. Those concerned have since accepted the revision as shown herein for promulgation by the U. S. Department of Commerce, through the National Bureau of Standards. The standard is effective for new production from June 20, 1940."

The main reason for the revision was difficulty with the sulfuric acid absorption test of the old standards. The sulfuric acid must have a concentration of 93.2 plus or minus 0.3 per cent rather than a specific gravity of 1.83 to 1.84 as by the old standards, and should be cooled in ice water for 5 minutes before being used. Results were not always uniform by the old method. The new standards also permit the use of a centrifuge for separating the acid from the oil rather than letting the sample stand for 12 hours.

Reference: U. S. Department of Commerce, National Bureau of Standards TS-2859, May 20, 1940.

Amount of Benzol in Gasoline

The neoprene diaphram utilized in the automatic gasoline nozzle which we manufacture is attacked by benzol to some extent. In estimating sales possibilities, we are interested in knowing how many companies use benzol in gasoline.—A. E. W.

The amount of benzol used in motor fuels in the United States has been as follows:

	Gallons benzol used in motor fuel per year	Percentage of total gasoline sold
1931	76,600,000	0.437
1933	57,400,000	0.336
1935	78,600,000	0.425

The percentage being used today is probably no greater than the above. In European countries the amount of benzol used is much larger, ranging from 2.5 to 4.5 per cent of the total petrol sold in the United Kingdom prior to the war.

Statistics are not available concerning the many small independent oil companies which blend and sell gasoline at filling stations. Probably none of the manufacturers (refiners) of gasoline, use benzol in their gasoline except when requested to make special blends by small purchasers. The amount of benzol used in gasoline seldom exceeds 15 per cent and the average is probably well below 8 per cent. From such a figure it would appear that only 5 to 9 per cent of the total gasoline sold in the United States contains benzol.

The percentages of companies that handle benzol gasoline may be somewhat higher because the smaller companies are the main users of benzol and because both benzol and regular gasolines are usually sold by the same company.

Several companies report that neoprene and duprene give little trouble with benzol gasoline but that pure benzol continues to give difficulty.

Flash Point of Lube-Oil Blends

I am desirious of obtaining data regarding the flash point of lubricating oil blends as a function of the flash point of the stocks that are blended.—R. W. C.

I am not aware of any direct studies of the flash point of blends of stocks but the problem is an important and common one.

Fundamentally, the flash point of oils is a fraction of the vapor pressure of the oil. For lubricating oils, flash occurs at the temperature at which the oil exerts a vapor pressure of about 1 mm. This is also true of blends, and hence the vapor pressure of the blend can be computed as follows:

$$m_1 p_1 + m_2 p_2 = 1$$

in which m refers to the mol fraction of oils No. 1 and 2 and p to the vapor pressure. Subscript 1 has been used here to refer to the high-flash material.

Although vapor-pressure data are not extensive for the very low pressure of 1 mm., such information as is available indicates that the vapor pressure is doubled for a rise in temperature of about 25° F. Thus designating flash points as T_1 and T_2 and the lowering of the flash point of the high-flash oil as X (°F.), the above equation may be stated as:

$$\frac{m_1}{2^{X/25}} + m_2 2^{\frac{T_1 - T_2 - X}{25}} = 1$$

Except for the assumption regarding the rate of change of vapor-pressure with temperature, the above is a dependable statement of the flash point of blends.

The mol fraction can be computed by means of the density, and molecular weight in the customary manner.

No simple manner of solving the equation for X (or determining the value of the flash point) is available and hence it is suggested that the equation should be solved for all values of X and the results plotted in the form of a graph.

For the special case in which the two oils have about the same gravity and molecular weight, the flash point of blends by means of the equation are somewhat as follows:

FLASH POINTS OF BLENDS OF TWO STOCKS OF THE SAME MOL WEIGHT AND DENSITY, AND WHOSE FLASH POINTS ARE 100° APART

Blend, mol % high-flash oil	Flash point, °F.
100	500
90	467
75	444
50	423
25	410
0	400

Similar data can be computed and plotted for all possible combinations of oil, including those of different molecular weights and different flash points.

Analysis of Some Factors Involved in Geochemical Prospecting

By W. V. HOWARD

This is the second of two articles dealing with present known theoretical data on geochemical methods of prospecting. The first article appeared in the July 4 issue, Page 33.

VARIOUS methods of soil analysis are used at the present time. These may be divided into three general categories: analysis of soil-air, analysis of hydrocarbons in the soil in solid or liquid form, and analysis of mineralization which is believed to accompany the upward migration of hydrocarbons. Sometimes these methods are used separately and sometimes they are used together. In the United States, methane is largely disregarded but in the Soviet Union, where the method was first used, methane is considered highly important.

If hydrocarbons rise from an oil deposit towards the surface, then not only is the cap rock of an oil deposit slightly permeable across the bedding, but so also are all other formations. Any absolutely impervious formation occurring in the path of rising gases would act as a barrier to all migration. Even one or two highly impermeable beds would act as bottlenecks and would govern the quantity of gas moving upwards above them, no matter how permeable the higher formations might be.

Experience in oil reservoirs and great numbers of permeability measurements show conclusively that formations, even sandstones, are much more permeable along the bedding than they are across it. On theoretical grounds, therefore, migration upward from a stratigraphic trap might take place across the bedding in some formations, but it would tend to follow inclined beds towards the top of the structure and then work vertically toward the earth's surface. (Fig. 1.)

This does not in any degree condemn soil analysis as a means of finding offstructure traps. In fact, it might convert an apparent failure of the method into a brilliant success. If favorable indications were found on a structure which proved dry, then we might assume that somewhere on the flanks of that structure there was a stratigraphic trap. Our knowledge of the regional geology of the area would indicate what that trap might be and also approximately where it might be located. A few slim holes might pin it down and bring in a pool whose presence might have been unsuspected except for the clue provided by soil analysis.

Variations between lateral and vertical permeability of stratified rocks lead to the tentative conclusion that soil analysis gives positive results on structures and, of course, in the vicinity of faults. If positive results are obtained by soil analysis and drilling results in a dry hole, that may not condemn the structure, but may indicate the presence of a stratigraphic trap down the flanks. Since lateral permeability will lead gases into even minor structures in basins, these may be found by soil analysis as the gases will migrate into them along the bedding, but after reaching the crest they will not move down again. Similarly, if negative results by soil analysis are contradicted by a successful well, this indicates the likelihood that this theory of preferential migration along bedding planes is correct. Tests on the structure, possibly a few miles updip, might give positive results, even though the crest of structure was dry.

All of this discussion is, of course, theoretical and is based upon the theory that gases do migrate upwards through the rocks. The American practice of ignoring the methane content of soils is based primarily upon the theory that the presence of methane does not necessarily indicate the presence of oil, or even natural gas. All soils contain organic matter and this organic matter breaks down into gases, including methane and carbon dioxide, and water. Without knowing how much of the methane contained in the soil came from decomposing vegetable matter in the soil, it would be impossible to determine whether or not any came from greater depths.

Gas-Cap Theory

The Russian theory as advanced by Sokolov takes methane into consideration. It stresses, among other things, the ratio between methane and the higher hydrocarbons. In spite of the fact that more methane should leave a deposit of oil and gas than any other hydrocarbons, the concentration of higher hydrocarbons in the soil is frequently greater than that of methane. This suggests one or more of three possibilities.

1. The heavy hydrocarbons diffuse more readily than the light hydrocarbons. This is not impossible as some heavy hydrocarbons pass through rubber more easily than does methane.

2. The heavy hydrocarbons are not original, but are formed from methane in the soil by oxidation and polymerization.

3. The soil will absorb or adsorb heavy hydrocarbons more readily than methane, which passes out and into the atmosphere.

Sokolov shows profiles which exhibit the typical ring formation of higher hydrocarbons around the edge of a producing structure and a peak of methane concentration in the center. (Fig. 2). This is explained on the basis of a gas cap in contact with the upper surface of the reservoir at the crest of the structure, which conforms to our experience of petroleum reservoirs.

Sokolov and his associates consider that the heavy-methane ratio can be used to determine depth of the oil deposit and also its character. A high methane content is believed to represent a shallow deposit of light hydrocarbons. A high methane content with no heavies would thus indicate the presence of dry gas, provided it was not marsh gas.

A theory which has been advanced is that con-

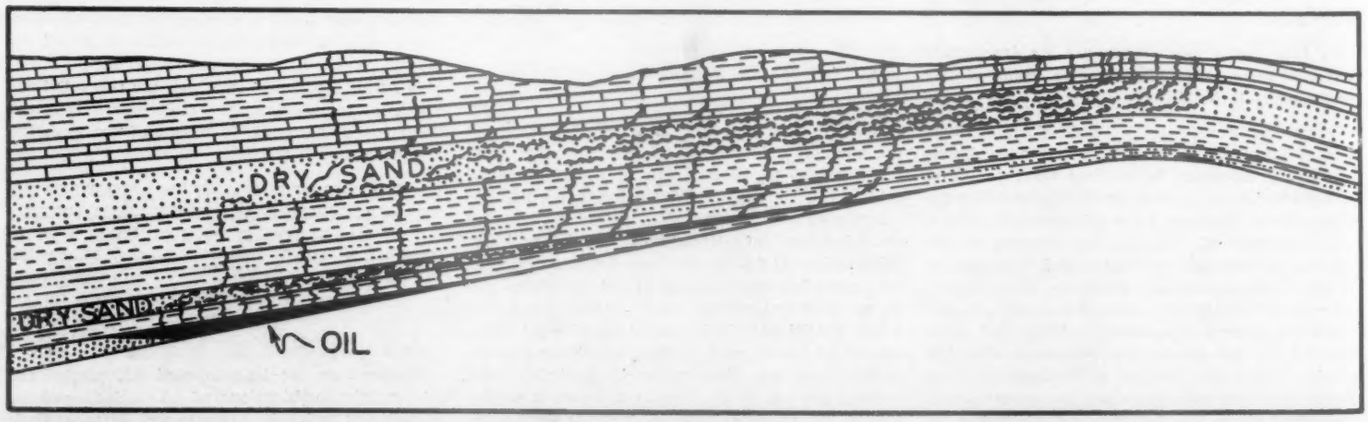


Fig. 1—Hypothetical migration of vapors from oil sand in a stratigraphic trap. The movement follows the zones of greatest permeability which are not necessarily vertical

ditions are different over structures and that rising gases evaporate water resulting in the deposition of solutes contained in the water and increased mineralization. This increased mineralization, presumably, prevents the upward migration of more gas. This theory appears to be self-contradictory. The temperatures are higher at depth than near the surface and when, or if, the oil deposit formerly existed at greater depth than at present, this temperature increase would be even greater. Isothermal lines form a very broad cone whose slope is normally less than that of the structure and, therefore, the evaporation at all points above the oil pay would necessarily be greater than near the surface on structure. Thus, if this latter evaporation renders rocks impermeable, the greater evaporation at depth would render the whole section impermeable and soil analysis would not work.

Proponents of the theory of mineralization do not tell us what minerals are deposited and it is quite possible that the effects ascribed to mineralization are due to some other cause.

We have thus reached conclusions which seem logical concerning this upward migration of gases and the results of all three variations of soil analysis, but we have not yet shown whether or not the hydrocarbons and mineralization in the soil have any bearing on actual oil deposits or not. As developed up to date, we are at the normal stage for most theories. We have shown that, if certain things are true, then a procedure is valid. In other words, if methane and heavy hydrocarbons migrate upward from deep-seated oil reservoirs, then soil analysis is an extremely valuable aid in finding these deposits.

Migration of Hydrocarbons

The hydrocarbons found by soil analysis have been called microscopic oil seeps and the analogy may be extended to cover one mode of formation of these seeps. In a fractured area, oil and gas may rise to the surface along faults and joints in large quantities to form large seeps. Obviously, where the joints or faults are tight, smaller quantities may seep upwards to form the minute concentrations determined by soil analysis.

Many geologists consider that the rocks tend to be fractured minutely over anticlines and other structures and if this is correct, then these small fractures would also provide channels for upward migration. If these fractures do not exist and the rocks are at all permeable, then gases and vapors rising from them would move more or less vertically upward also.

The mechanics of the migration of hydrocarbons which have leaked from a reservoir and eventually reach the surface are not known. Some have assumed that the gases move upward as bubbles, while Fash considers that the upward movement is in great part a combination of adsorption and capillarity.

Fash appears to recognize a sort of coning above the deposit as he questions the existence of halos, at least as universal accompaniments of oil fields. Where halos exist, he considers them to be as much due to the sorptive powers of the soil as to anything else and this implies an orientation of soil types around a structure.

It is possible that both the bubble type of movement and the adsorption plus capillarity type occur. In coarse sands, a stream of molecules of of gas would build up small bubbles as the sorptive power of sands is much smaller than that of shales and the openings between the grains much larger. A fluid dispersed through another fluid will not move easily through it, whether by buoyancy or as a part of a stream. However, as a sufficient number of molecules collect, a bubble is formed which will, in the great majority of cases, be trapped by wedging between grains so close together that the bubble cannot be distorted so as to pass between them. However, if the bubble continues to grow until its center of gravity falls below the border of the impounding grains, it will move out and around them until it is caught somewhether else in the formation. Eventually it will find its way to the contact with the next upper bed and, presumably, to the top of the structure.

In shales, movement is more likely to be by adsorption and capillarity and the hydrocarbons will cone outward, only to be recollected at or near the crest of the structure on reaching the next porous bed.

Distance of Upward Movement

Having determined two possible means of migration, it is now necessary to ascertain whether or not this movement might be interrupted, how far it would go, how long it would take, and how many deep-seated concentrations of hydrocarbons it would require if the gases move upward from great depths.

Many geologists hold the view that if oil or gas will move an inch through the rocks, it will move a hundred miles. This is equivalent to saying that if a man can walk through a forest, he can walk through a pile of lumber. The rocks are far from homogeneous and in many cases movement is possible in one direction but not in others.

Vertical movement of bubbles of gases across the bedding planes of shale can be considered impossible. Movement by adsorption and capillarity may be extremely difficult, if not impossible, in many shales. The adsorbed film reduces the surface tension effect of the solid, which, in turn reduces the amount of rise of the liquid along the interface. The fact that the rise of liquids in capillaries increases as the diameter of the tube decreases indicates that the surface tension effects extend across the tubes. If, therefore, the tube is subcapillary and is filled with water, the interfacial tensions in these subcapillaries will cause the water to be firmly wedged in them just as connate water remains in an oil sand at those points where the grains come closely together and cannot be removed except by heating the rock.

Variations in Surface Tension

Heating, of course, reduces the surface tension effect, but if it reduces the surface tension effect between rock materials and water, it will also reduce the surface tension effect between rock material and hydrocarbons. Moreover, the minerals which adsorb substances readily tend to be catalytic agents and the higher temperatures existing at depth would increase the rate of reactions. If these reactions include the mineralization postulated by Rosaire, this would cause more precipitation at depth and, therefore, even greater impermeability. The viscosities of fluids decrease with the higher temperatures existing at depth, although they are virtually unchanged by pressure. There are, thus, forces which tend to increase the permeability of rocks at depth and others which tend to decrease it. Until we are able to determine exactly the resultant of all of these conflicting tendencies any statement regarding the flow of fluids through rocks at depth is unsupported by definite evidence and is purely hypothetical.

It can, however, be stated that if hydrocarbons migrate upwards from deep-seated oil pools, there should be relatively higher concentrations in samples of the more highly sorptive shales than in samples of sand or limestone. Some logs presented by Rosaire show variations of the order of two or three to one, which is less than the variation in sorptive power of rock materials.

One fact which is of interest in this connection

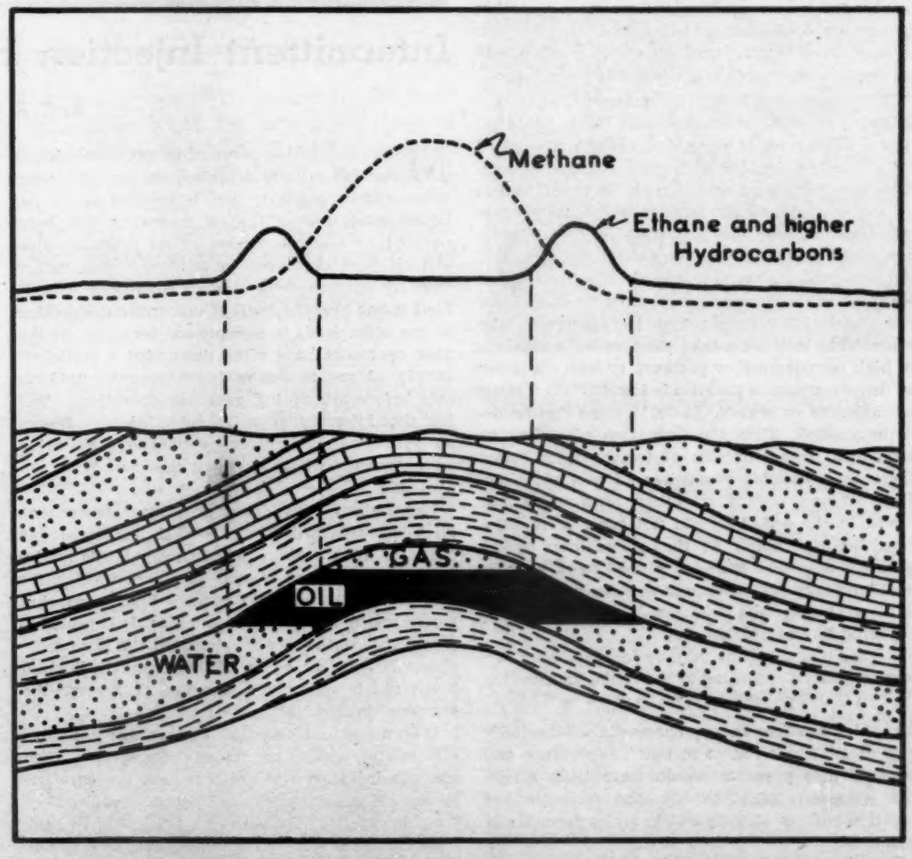


Fig. 2—Explanation of relatively high concentrations of methane and of higher hydrocarbons above a structure according to Russian geological theory

is that many, if not most, oil-bearing structures are characterized by a number of superimposed sands and limes containing shows of oil and gas or even superimposed commercial sands. The work of Barton, supplemented by the more recent work of the A.A.P.G. committee on correlation of analyses of oil and stratigraphy, indicates that these oils have not come from a common source. Thus, conditions suitable for the formation and accumulation of oil have been repeated on these structures, which continued to rise irregularly throughout geological time. This is particularly true on the Gulf Coast where geochemical prospecting appears to have met with its greatest successes. Moreover, the large seeps on which wells were drilled in former years came from upper sands, rather than from lower ones; otherwise, the oils in the various reservoirs would be more nearly homogeneous than they are. The hydrocarbons detected by soil analysis may thus represent emanations from shallow sands, rather than from deep-seated deposits. This is borne out, to some extent, by geochemical logs as published by Rosaire which show sharp reductions in hydrocarbon content above the pay.

The theory has been advanced that rising emanations clog the formations above the pool either with oil or with inorganic precipitates and that the rising gases then mushroom out and rise around the edges of this area. If this theory is correct, it is hard to understand why the clogging does not continue to spread out beyond the limits of the pool thus causing the hydrocarbons to mushroom out still farther and so on, indefinitely.

Changes in Composition

Various theories have been presented to explain the presence of waxes at the surface, also unsaturated compounds. As has been suggested in the first part of this article, some of these unsaturates and waxes may be aldehydes rather than hydrocarbons. Bureau of Mines chemists report that petroleum contains no olefins, and dehydrogenation of paraffins to form olefins takes place only at high temperatures and under high pressures.

Frequently one hears the statement made that high-temperature reactions may take place at low temperatures if given time enough. The speed of a reaction doubles with each 10° rise of temperature but this variation is not continuous throughout the whole range of temperatures. If a reaction involves the liberation of free energy, the reaction is thermodynamically possible and spontaneous. If, however, the change involves an increase in free energy, work must be done upon the system in order to permit the change to take place. That is, it must take place under conditions of high temperature or pressure or both. In order to dehydrogenate a paraffin below 400° C., it must be dodecane or higher. At 600° octane can be dehydrogenated. Thus the formation of olefins or aromatics from paraffins at temperatures below these is impossible regardless of geologic time. If, therefore, olefins or other unsaturates are found in the soil, they did not come from saturated hydrocarbons. At the same time, hydrogenation may take place to some extent, even at low temperatures, although equilibrium will be attained before the reaction has proceeded to anything like completeness.

Higher hydrocarbons may be formed under certain conditions according to the following reaction

$$2C_4H_{10} \rightarrow C_2H_6 + C_6H_{14}$$

for which the free energy change is substantially zero at all temperatures so that temperature and possibly also pressure would have little effect. This reaction might explain the formation of higher members of the paraffin series from lower members.

Examination of the theories upon which geochemical prospecting is based indicates that it is possible to determine minute quantities of hydrocarbons in soil and soil air. There is, however, always a danger of contamination from some source other than deep-seated deposits of petroleum and this danger may be minimized by the use of multiple sampling points at individual stations and by frequent check analyses. It is also considered preferable to check the positive results of a survey by resampling and analysis before drilling on geochemical evidence alone. This necessity is lessened if geochemical prospecting checks some other method of locating favorable structures.

In the absence of fractures, the rise of vapors through the strata at points other than at the apex of structures cannot be satisfactorily explained at the present time, and even on structure the effect of all of the variables involved is so complicated that the quantitative relationships cannot be demonstrated mathematically. In fact, it is entirely possible that shallow deposits, even though noncommercial, are responsible for some of the hydrocarbons which have been found.

Higher hydrocarbons may be formed from lower members of the same series under any conditions of temperature and pressure and these are more easily detectable than the lower gaseous or volatile members. Unsaturated compounds, such as olefins, however, are not contained in petroleum and have no bearing on possible reservoirs beneath. The universally reported presence of small quantities of hydrocarbons may be due to several causes, including (*a*) origin from the fermentation of plant and animal remains in the soil, (*b*) determination as CO_2 and water which includes some unextracted portion of these substances, or (*c*) the reporting of aldehydes and other organic compounds as hydrocarbons.

These facts do not necessarily detract from the value of soil analysis as only abnormally high concentrations are considered of importance.

In the absence of a definite theoretical basis, geochemical prospecting must rest upon an empirical basis. If it outlines oil fields, these results are of much more importance than a theoretical statement that it cannot do so. At the same time, in the absence of a well-founded theory, anomalous determinations and occasional failures cannot be explained. If the relationships of upward migrating vapors and the accumulation of hydrocarbons at the surface were thoroughly understood, the cause of these misleading results would also be known and the expense of drilling undertaken as a result would be minimized.

Suggested FIELD PRACTICES . . No. 5

Intermittent Injection Helpful in Repressuring

By T. P. SANDERS

MOST so-called repressuring projects can be more accurately described as gas-drive operations, since gas injection is applied when the liquid saturation of the oil formation has been reduced to a small portion of its original value and oil must be moved by a viscous drag rather than by displacement. Under conditions of this kind it has been found that intermittent injection of gas often leads to exceptional benefits. In the past, operators have often demanded a sufficient supply of gas to insure injection at a uniform rate before attempting gas-drive operations. The fact that intermittent or irregular injection favors oil recovery should encourage the use of gas drive on properties where a steady gas supply is not available.

Experience in gas-drive work has shown that oil production will increase with increased gas input up to a certain point. Beyond this an increase in gas may retard production. Further increases will cause excessively high producing gas-oil ratios, indicating channeling. It is probable that oil is continually moving into the permeable channels from the adjacent tighter sands, but too much gas injection will decrease or reverse the pressure differential.

It seems quite likely that the average gas drive affects a very small portion of the reservoir. With uniform injection and uniform back pressure the system becomes fixed in its underground position. Any change in the injected-gas volume or in back pressure tends to change the pressure differentials in the various parts of the reservoir, thereby broadening the effects of the gas drive. When intermittent injection is used, the permeable channels are invaded by oil from the adjacent tight sands during the shutdown periods. This oil is then moved to the producing wells when the gas is turned on.

In 1932, while operating a gas-drive system in a limestone pool of the Texas Panhandle, the writer noticed that any accidental change in operating conditions brought about an increase in lease production. Without doubt intermittent injection would have been beneficial, but theory of that day called for unvarying injection.

Little is known as to what injection cycle is likely to prove most advantageous under various sand conditions. Since channeling takes place only after a period of gas injection, intermittent injection should be applied initially, and the time cycle should probably be changed from time to time as the pool approaches its economic limit.

BOOK REVIEW

DICTIONARY OF METALS AND THEIR ALLOYS. By F. J. Camm. Chemical Publishing Co., Inc., New York. 245 pp. $3.

This volume contains descriptions of the metals, their composition and characteristics, with special sections on plating, polishing, hardening and tempering, metal spraying, rustproofing, chemical coloring, and useful tables. Text matter is presented in dictionary form.

Operating Ideas

Swiveled Guard Avoids Flood Damage

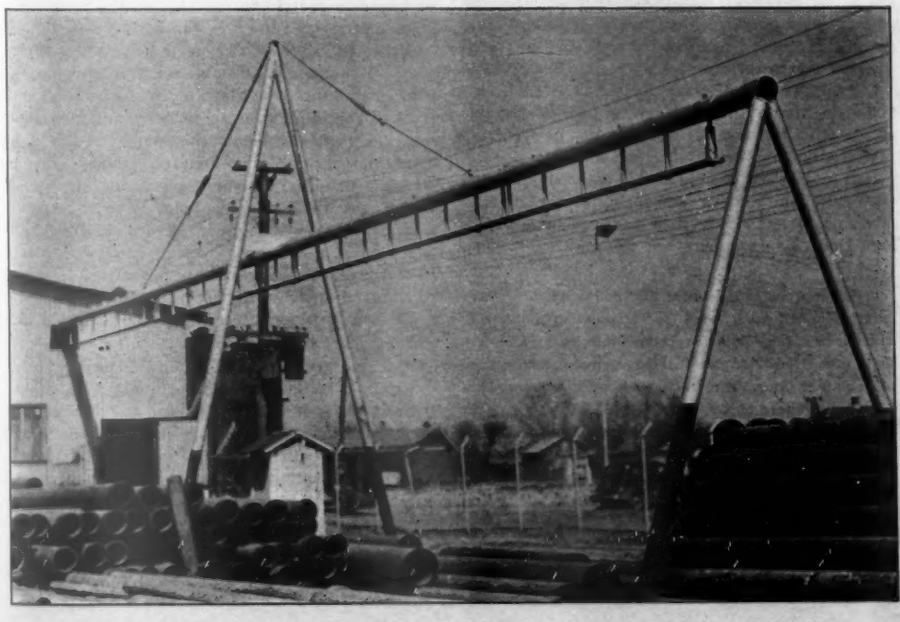
Exclusion of wandering cattle from leases is necessary to avoid possible damage suit in case an animal is injured by pumping equipment, or dies from any malady which may be twisted to show possible "poisoning" by contact with crude or its derivatives. One producer guards his leases with a tight wire fence, adequate cattle guards, and an ingeniously contrived block gate for such streams as traverse his leases. A section of 2½-in. pipe is hung in bearings on heavy pipe posts at either side of the stream channel, and a timber block, formed to fit closely to the stream's banks, bolted to this pipe. Normally restrained from opening outwardly by a pipe or concrete stop buried in the stream bed, the swiveled support acts as a hinge to permit the entire device to ride with the flood and permits an increased flow of water, debris laden, to pass below the timbers. Where the action of the stream at flood is to open the guard in the same direction as trespassing cattle would tend to move it, a heavy latch is fitted, this being tripped by the switcher at the outset of a storm, and again set after the runoff has passed.

Old Materials Used for Tank-Battery Walkway

At a central tank battery in the Hull-Silk field of Archer County, North Texas, one independent producer had built the stairs and walkway shown in the accompanying photograph. The structure was made entirely from used pipe with old sucker rods welded between to form the stairs and walkway. Handrails of 2-in. used pipe completed the installation, which was constructed by the welder entirely during periods when his presence was not required elsewhere. The entire structure is in one piece so that it can be moved to another lease if desired. The painted drum at the end of the walkway serves as a constant reminder to the gager that this is the proper place to dispose of rags and waste.

Conveyor Handles Pipe From Yard to Machine Shop

Full lengths of pipe of any commercial weight may conveniently be taken from the plant yard to the machine shop by means of this unusually simple but substantial elevated track. The track, as shown in the picture, is supported by an 8-in. horizontal pipe which in turn is supported by 6-in. pipes welded into the shape of a V and resting on concrete ground foundations. These allow a clearance of more than 10 ft. at the base. The overhead horizontal pipe is welded to a cross member of the V supports and 10 ft. out from this point, the horizontal pipe is supported on each side by adjustable cables running over the center V support. The track in turn is suspended from the horizontal pipe every 2 ft. by an inverted and adjustable Y bolt. The base of the bolt is threaded. The track may be adjusted by the supporting nut to bring it into alignment.

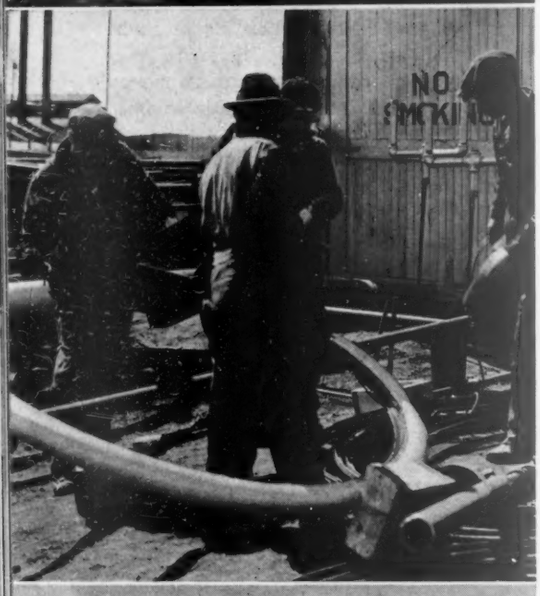


Band-wheel-Powered Pump

In the K.M.A. field of North Texas one large operator is taking full advantage of the power source offered by a band-wheel power, used to pump old shallow producers in the field. As shown in the accompanying photograph, a reciprocating pump was placed on one rod line from the power and its motion used to pump oil from lease storage to the gathering station. Due to the flexibility of a rod line, conventional rods were replaced with 3-in. used pipe held at a constant level by lubricated wood blocks. The pump is bolted to a plate welded to a piece of 6-in. pipe, the ends of which are cemented in the ground to form a sturdy foundation. On the opposite side of the power a similar installation is set.

Refiner Makes Display Signs From Scrap Metal

By W. T. ZIEGENHAIN



Top: Several completed bases and poles. In foreground is base plate with holes for foundation bolts and conduit. Middle: Workmen completing frame for sign. Note round T-bar frame welded to semicircular tube section. The latter was reclaimed from cracking still after many hours of service. Bottom: Assembled upper section of sign in background. In foreground lies T-bar frame with conduits for upper half in place with outlet box in immediate foreground. On the opposite side of frame is shown plate and reinforcements for bolting two sections together

UTILIZING some scrap metal from the refinery, the Johnson Oil Refining Co. at its Cleveland, Okla., plant has kept several welders busy making up sturdy and attractive filling-station display signs and at costs which are from one-half to one-third those of purchased signs of the same size. The pictures included here give the best idea of how the two essential parts of the sign are assembled.

The 2 by 2-ft. base plate on which each assembly rests is cut from heavy steel plate. Holes are burned through each corner to enable bolts to hold the sign to the concrete foundation. The post or support for the sign is reclaimed from 6-in. ordinary pipe which rests on and is welded to the base plate. An extra-heavy bead of iron is built up at the weld to hold the plate and pipe together as a rigid support. To dress up the base a boxlike covering is made from steel sheeting. This covering has five faces, the one large face having a 7-in. hole burned through its center so that the cover may be slipped over the pipe support. The cover is made large enough to just slip over the base plate and actually rests on the concrete. The sides of this cover are 6 in. high. To complete this portion of the assembly a hole is burned through the base plate near one corner and a similar hole is burned through the pipe support above the joint where it is welded to the plate. These two holes accommodate the electric conduit which is brought to the base of the sign through the cement foundation. From the base the conduit is threaded through these two holes, up through the pipe support and into the outlet box located just below the sign panel.

The upper portion of the sign is not so simple. However, it is composed of relatively few parts. The sign panel is steel plate cut round with about a 6-ft. diameter. This panel is bolted to a round frame made by bending and welding the ends of a T-bar. In bending the T-bar the flat face of the bar provides the outer surface. This provides an offset for mounting the sign panel and also provides a smooth surface on the outside for attaching the parts. However, during construction, the sign panel is not mounted in the frame until after a semicircular section of a discarded still tube has been tack-welded to the lower half of the T-bar frame along the smooth or outside face of the frame. This adds weight and rigidity to the sign panel and adds to the attractiveness of the assembly besides supplying a housing for the electric conduit.

It is interesting to note at this point that a more uniform shape and easier job of bending results when using a still tube that has been in service a long time than when trying to bend a new one. Apparently sufficient change comes about in the structure of the metal to cause the tube to be ideally workable. At the outside and center of the semicircular tube section a heavy plate is welded to the tube and two curved reinforcing plates are then welded on either side of the tube and to the plate to firmly hold the plate and tube together. This is important because the sign develops a severe strain at this point when the wind strikes the face of the sign.

Holes burned through the plate and tube section allow the electric wires which come up on the inside of the pipe to be threaded through the tube section on their way to an outlet box mounted on top of the panel frame.

Finished sign except for lights. Outlet box is shown for mounting goosenecks on either side of sign and for mounting flood light on top

Two conduits take the wires from the ends of the tube section to this outlet box. Care is taken to seal the tube section at each end and this is done by welding a thin plate across each face of the tube and around the conduit. These conduits follow the round frame to the outlet box and they help to hold this box rigid. From this box any combination of lighting may be utilized and the box is especially well designed to permit short goosenecks to be installed to light the two sides of the sign panel. On top of the box a connection is provided for mounting a floodlight or a series of such lights to illuminate the station. In addition to lighting the main sign panel, the side outlets permit light to fall also on the temporary signs below.

Obviously, as these two parts leave the refinery they are in shape to assemble readily. In place, the completed support is given a finish coat of paint.

After the support is in place, temporary signs may be displayed below the main circular sign. These are usually mounted on wooden frames which are bolted to short pieces of strap iron which are welded to the pole. Several of these may be seen in the upper picture on this page. The size of the temporary sign can vary over a wide range. This enables the effective, safe and economical display of notices, prices and sales slogans in keeping with trends in the retail market.

Obviously, the effectiveness of the permanent and temporary signs will depend largely upon the nature of the material printed on them but it has been found to be almost equally important to exhibit these signs in an orderly, substantial and attractive manner. In this respect the refinery organization has been able to supply such an assembly and at a relatively low cost because some discarded materials are used.

Runs to Stills Continue to Decline in Mid-Continent Area During July

ESTIMATED daily crude runs in the Mid-Continent area continued to decline in July with a total of 549,340 bbl. being processed daily, compared with 552,935 last month and being 6,760 bbl. under the peak set in May.

Of the four districts increasing crude runs, Arkansas made the only appreciable gain as the Lion Oil Refining Co. at El Dorado, stepped its operations up 1,000 bbl. daily. Other plants in Arkansas remain on schedules set in June.

Oklahoma

Estimated daily crude runs in Oklahoma totaled 156,000 bbl. for the month of July, compared with 127,500 bbl. last month. Increased crude schedules were reported by the Bareco Oil Co., Barnsdall, from 3,500 bbl. in June to 4,000 bbl. in July; Ben Franklin Refining Co., Ardmore, from 3,750 to 4,000 bbl.; Phillips Petroleum Co., Okmulgee, from 6,000 to 6,700 bbl. and the Rock Island plant at Beckett, which was up 300 bbl. daily. However, the increase at these plants was more than offset by reductions at the Wilcox plant at Bristow and the Continental Oil Co. refinery at Ponca City.

North Louisiana

North Louisiana refineries report a total of 39,850 bbl. daily being run to stills, compared with 39,000 in June. Evansville Oil Corp. and Premier Oil Refining Co., Cotton Valley; and the Stanolind Oil & Gas Co. at Superior have increased crude runs. The Pennant Refining Co. plant at Princeton reduced crude runs to stills by 100 bbl. daily. It is reported that ownership of the Atlas Pipe Line Co.'s refinery and pipe-line properties in North Louisiana, East Texas and Arkansas may change hands soon, as receivers for the company continue to confer with interested parties.

East Texas

In the East Texas area crude runs are up at several plants, the decline of 2,200 bbl. shown in the total being due to the Hurricane Petroleum Co.'s plant at Overton being shut down, pending outcome of conferences between company and state officials involving payment of state taxes. This plant processed 4,000 bbl. daily in June. Lynch Refining Co.'s two plants at Kilgore show a slight increase in crude runs in July; the Premier Oil Refining Co. plant at Greggtown and the Talso Asphalt & Refining Co. at Mount Pleasant also increased crude runs to stills. Total daily crude runs are estimated at 40,800 bbl. in July. Three more East Texas refineries have been dismantled; the East Refining Co. and the Tower Refining Co., both at Overton, and the Royal Refining Co. of Kilgore, all of which have been shut down for several months.

The E. C. Johnston Refining Co., newly organized firm which is constructing a refinery at Vicksburg, Miss., will place the plant on stream August 1, according to present plans. The refinery will charge Tinsley crude from the nearby Mississippi field, which will at first be moved to Vicksburg by tank car.

North Central Texas

In the North Central Texas area, estimated daily crude runs increased 640 bbl., with a total of 39,825 bbl. being processed compared with 39,185 bbl. in June. Motor Fuels Corp. at Levelland increased daily crude runs from 2,900 bbl. to 3,200 bbl.; Moutray Oil Co., Hawley, from 750 bbl. to 810 bbl.; Phillips Petroleum Co. at Borger reduced crude runs approximately 400 bbl. daily; and the Shamrock Oil & Gas Corp. at Sunray increased operations from 1,750 bbl. in June to 2,000 bbl. in July. The Taylor Refining Co. plant at Taylor, which has been running some 600 bbl. of crude daily, is now shut down.

Southwest Texas

In the Southwest Texas area daily crude runs to stills were estimated to be 17,025 bbl. in July, a slight increase over the total of 16,900 bbl. reported in June.

Mid-Continent Crude Runs

Average Daily (Barrels)

(Advance estimate compiled by The Oil and Gas Journal)

	1938	1939	1940
January	529,710	503,405	532,085
February	507,985	494,910	526,785
March	491,935	497,180	531,645
April	532,120	523,535	532,845
May	527,315	534,535	556,100
June	540,005	541,090	552,935
July	557,520	550,755	549,340
August	554,810	556,095	.....
September	555,695	550,830	.....
October	531,325	547,725	.....
November	524,035	537,375	.....
December	503,530	527,230	.....

Operations by Refinery District

Daily crude runs

	July	June	Incr.
Arkansas	30,400	29,400	1,000
East Texas	40,800	43,000	*2,200
Kansas	142,700	144,800	*2,100
N. Central Texas	39,825	39,185	640
North Louisiana	39,850	39,000	850
Oklahoma	156,000	157,500	*1,500
Southwest Texas	17,025	16,900	125
W. Texas Panhandle	82,740	83,150	*410
Total	549,340	552,935	*3,595

*Decrease.

Estimated Daily Average Mid-Continent Refinery Crude Runs for July

OKLAHOMA

Company and location—	Daily capacity	Av. dly. runs July	Av. dly. runs June
Anderson-Prichard Ref. Corp., Cyril	8,000	6,500	6,500
Bareco Oil Co., Barnsdall	5,000	4,000	3,500
Bell Oil & Gas Co., Granfield	4,500	3,000	3,000
Ben Franklin Ref. Co., Ardmore	6,000	4,000	3,750
Black Gold Ref. Co., Oklahoma City	2,500	2,000	2,000
Champlin Ref. Co., Enid	16,000	15,000	15,000
Cities Service Oil Co., Okmulgee	4,000	(*)	(*)
Cities Service Oil Co., Ponca City	12,000	10,000	10,000
Continental Oil Co., Ponca City	28,000	23,000	24,750
Cushing Ref. & Gasoline Co., Cushing	4,200	3,500	3,500
Deep Rock Oil Corp., Cushing	10,000	9,000	9,000
Johnson Oil Ref. Co., Cleveland	6,000	4,000	4,000
Mid-Continent Pet. Corp., West Tulsa	35,000	21,000	21,000
Omar Ref. Co., Garber	5,000	(*)	(*)
Phillips Pet. Co., Okmulgee	6,000	5,700	6,000
Peppers Gasoline Co., Oklahoma City	500	400	400
Rock Island Ref. Co., Beckett	7,500	6,300	6,000
Sinclair Ref. Co., Sand Springs	6,000	5,600	5,600
Sun Oil Co., Yale	5,000	(*)	(*)
Sunray Oil Co., Allen	7,000	4,000	4,000
Texas Co., West Tulsa	16,000	15,000	15,000
Tide Water Oil Co., Drumright	12,000	10,000	10,000
Wilcox Ref. Division, Bristow	5,000	4,000	4,500
Total	211,200	156,000	157,500

*Shut down.

ARKANSAS

Company and location—	Daily capacity	Av. dly. runs July	Av. dly. runs June
Berry Asphalt Co., Waterloo	2,000	1,200	1,200
Henry H. Cross, Smackover	6,000	3,500	3,500
Lion Oil Ref. Co., El Dorado	17,000	16,000	15,000
Macmillan Pet. Corp., Norphlet	2,500	2,000	2,000
Root Ref. Co., El Dorado	10,000	7,500	7,500
Stephens Ref. Co., Stephens	700	200	200
Total	38,200	30,400	29,400

KANSAS

Company and location—	Daily capacity	Av. dly. runs July	Av. dly. runs June
Anco Ref. Co., Garnett	500	350	350
Bareco Oil Co., Wichita	5,000	5,000	5,000
Bay Pet. Co., McPherson	4,000	3,300	3,000
Chanute Ref. Co., Chanute	2,000	1,800	800
Consumers Cooperative Assn., Phillipsburg	3,000	3,000	3,000
Derby Oil Co., Wichita	8,000	7,000	6,500
El Dorado Ref. Co., Eldorado	7,000	5,000	6,000
Falcon Ref. Co., Inc., Great Bend	2,500	1,500	1,800
Globe Oil & Ref. Co., McPherson	15,000	15,000	15,000
Kanotex Ref. Co., Arkansas City	12,000	7,000	7,000
National Ref. Co., Coffeyville	8,000	4,200	4,200
Pet. Products Co., Chanute	1,250	1,000	1,000
Phillips Pet. Co., Kansas City	23,000	17,400	18,000
Roper Pet. Co., Parsons	750	(*)	(*)
Shallow Water Ref. Co., Scott City	2,000	1,150	1,150
Sinclair Ref. Co., Coffeyville	12,000	9,500	9,500
Sinclair Ref. Co., Argentine	11,000	9,500	9,500
Skelly Oil Co., Eldorado	23,000	20,000	20,500
Socony-Vacuum Oil Co., Inc., Augusta	25,000	20,000	22,000
Standard Oil Co., (Indiana), Neodesha	7,500	7,000	7,000
Vickers Pet. Co., Potwin	4,000	4,000	3,500
Total	176,500	142,700	144,800

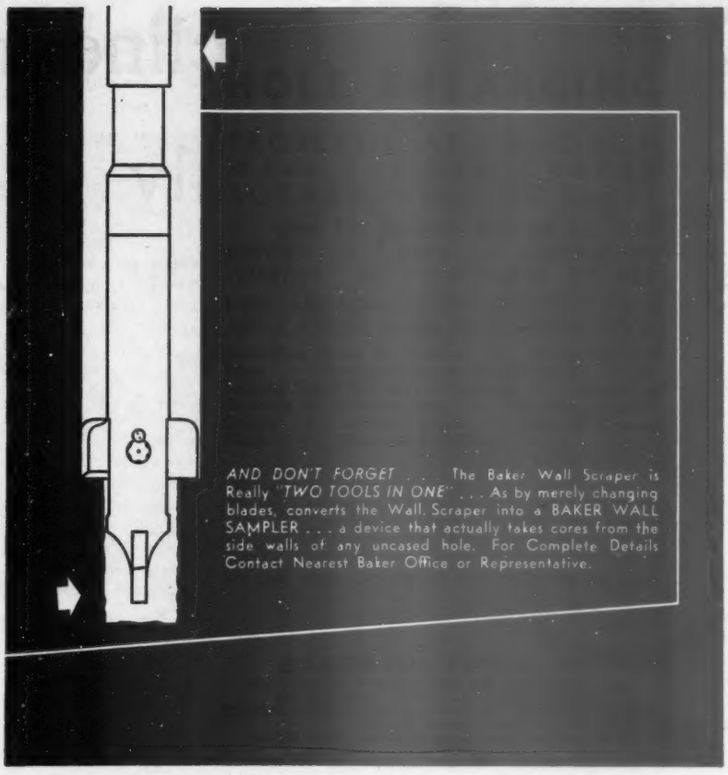
*Shut down.

NORTH LOUISIANA

Company and location—	Daily capacity	Av. dly. runs July	Av. dly. runs June
Arkansas Fuel Oil Co., Bossier City	23,000	19,000	19,000
Atlas Pipe Line Co., Shreveport	12,500	6,000	6,000
Bayou State Oil Corp., Hosston	800	800	800
Evansville Oil Corp., Cotton Valley	1,000	650	400
Pennant Ref. Co., Princeton	750	400	500
Premier Oil Ref. Co. of Texas, Cotton Valley	3,500	3,000	2,700
Rodessa Oil & Ref. Corp., Cedar Grove	12,000	8,000	8,000
Stanolind Oil & Gas Co., Superior	5,000	2,000	1,000
Total	58,550	39,850	39,000

EAST TEXAS

Company and location—	Daily capacity	Av. dly. runs July	Av. dly. runs June
Beacon Oil & Ref. Co., Henderson	4,500	500	(*)
Danciger Refs., Inc., Longview	6,000	(*)	(*)
East Texas Ref. Corp., Longview	10,000	5,000	5,000
Gladewater Ref. Co., Gladewater	3,000	2,000	2,000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Company and location—	Daily capacity	Av. dly. runs— July	June
Hurricane Pet. Corp., Overton	5,000	(*)	4,000
Hurricane Pet. Corp., Arp.	3,300	(*)	(*)
Independent Ref. Co., Arp.	5,000	3,000	3,000
Lynch Ref. Co. No. 1, Kilgore	3,000	2,400	2,000
Lynch Ref. Co. No. 2, Kilgore	4,000	2,400	2,100
Magnolia Pet. Co., Corsicana	5,000	3,500	3,500
McMurrey Ref. Co., Tyler	10,000	4,500	4,500
Premier Oil Ref. Co. of Texas, Greggtown	4,000	3,000	2,800
Talco Asphalt & Ref. Co., Mount Pleasant	8,000	7,000	6,600
Texas Co., Dallas	16,000	7,500	7,500
Total	86,800	40,800	43,000

*Shut down.

NORTH CENTRAL TEXAS

Company and location—	Daily capacity	Av. dly. runs— July	June
Baird Refining Co., Baird	1,500	950	950
Bryson Pipe Line & Refining Co., Bryson	2,000	1,000	1,000
Bryson Ref. Co., Inc., Bryson	1,500	1,300	1,200
Coleman Ref. Co., Coleman	800	400	650
Continental Oil Co., Wichita Falls	6,000	5,500	4,760
Cosden Pet. Corp., Graham	2,000	900	900
Falls Ref. Co., Wichita Falls	2,500	100	100
Gratex Ref. Co., Graham	500	300	300
Gulf Oil Corp., Fort Worth	8,000	6,500	6,500
Jacksboro Ref. Co., Jacksboro	400	100	100
La Salle Pet. Corp., Burkburnett	3,500	1,200	1,000
Magnolia Pet. Co., Fort Worth	7,500	5,750	5,750
Muenster Ref. Co., Muenster	1,800	600	600
North Texas Ref. Co., Gainesville	1,000	550	520
Ohio Oil Co., Fort Worth	5,000	4,000	3,750
Olney Oil & Ref. Co., North Olney	3,500	2,000	2,000
Panhandle Ref. Co., Wichita Falls	4,200	3,000	3,330
Panhandle Ref. Co., Lueders	1,500	850	900
Southland Ref. Co., Olney	500	200	200
Taylor Ref. Co., Taylor	4,000	(*)	600
Texas Pacific Coal & Oil Co., Caddo	800	500	450
Tucker Oil Co., Burkburnett	250	25	25
Tydal Ref. Co., Gainesville	2,000	600	600
W. T. Waggoner est., Vernon	5,000	3,500	3,000
Total	65,750	39,825	39,185

*Shut down.

SOUTHWEST TEXAS

Company and location—	Daily capacity	Av. dly. runs— July	June
Border Oil & Ref. Co., Sullivan City	1,000	600	500
Eggleston Oil Products Co., Three Rivers	1,000	775	750
Humble Oil & Ref. Co., San Antonio	5,000	3,750	3,750
Magnolia Pet. Co., Luling	8,000	5,000	5,000
Phoenix Ref. Co., San Antonio	2,000	1,000	1,000
Phoenix Ref. Co., Pettus	900	650	650
Pioneer Oil & Ref. Co., Somerset	2,000	750	750
Rado Ref. & Prod. Co., McAllen	800	500	500
Texas Co., San Antonio	5,000	4,000	4,000
Total	25,700	17,025	16,900

WEST TEXAS AND PANHANDLE

Company and location—	Daily capacity	Av. dly. runs— July	June
Aero Gas & Ref. Co., Fort Stockton	350	100	100
Coltex Ref. Co., Colorado	12,500	8,000	8,000
Cosden Oil Co., Big Spring	12,500	10,000	10,000
Danciger Refs., Inc., Pampa	6,500	5,000	5,000
Danube Oil Corp., Borger	800	600	400
Petrol Ref. Co., Lubbock	500	(*)	(*)
Gulf Oil Corp., Sweetwater	7,000	6,500	6,500
Howard County Ref. Co., Big Spring	2,000	650	600
Motor Fuels Corp., Levelland	4,000	3,200	2,900
Moutray Oil Co., Hawley	1,200	810	750
Onyx Ref. Corp., Hawley	2,000	1,800	1,800
Payward Ref. Co., Shamrock	1,000	450	450
Phillips Pet. Co., Borger	35,000	26,130	26,500
Post Refining Co., Rotan	800	350	350
Shamrock Oil & Gas Corp., Sunray	3,000	2,000	1,750
Shamrock Oil & Gas Corp., Lefors	1,600	900	850
Stamford Ref. Co., Stamford	450	300	300
Standard Oil Co. of Texas, El Paso	14,000	8,300	9,300
Star Light Ref. Co., Ballinger	1,000	550	500
Texas Co., El Paso	2,000	1,500	1,500
Texas Co., Amarillo	6,000	4,000	4,000
Western Ref. Co., Fort Stockton	1,000	800	800
Wickett Pet. Co., Wickett	3,500	800	800
Total	118,700	82,740	83,150

*Shut down.

Oil Companies Cooperate

OTTAWA, Ont.—Executives of the major Canadian refining companies, at a conference last week with G. R. Cottrelle, newly appointed federal oil supervisor, pledged complete cooperation of the industry in Canada's war effort. Mr. Cottrelle will later visit western Canada to familiarize himself with oil conditions there.

Gas-Regulating Station

LETHBRIDGE, Alta.—The Canadian Western Natural Gas, Light, Heat & Power Co. of Calgary has secured a permit for a regulating station at Thirteenth Street North, Lethbridge, to cost $2,400.

FIELD OPERATIONS

Summarizing the Week's Developments

NORTHERN TEXAS—The most eventful week since the start of the deep development program throughout North Texas was registered during the week when four new deep fields were discovered. This group of discoveries, one each in Montague, Clay, Foard and Jack counties, together with new fields last week in Wilbarger and Montague counties, total six new deep fields discovered in the past 14 days.

WEST TEXAS—Andrews County's new field discovery of several weeks ago has been officially gaged and at the same time gages are awaited on a north offset well and a 2-mile south extension well. A new Ordovician projected wildcat test was staked in northern Pecos County.

CENTRAL TEXAS—Three new discoveries were recorded in the Central Texas counties during the past week, one each in Jones, Brown and Eastland counties. All are believed relatively unimportant discoveries.

EASTERN TEXAS—The East Texas field, on a steady decline curve so far as drilling operations are concerned for the past 10 months, showed a sudden spurt of activity with 18 new locations being staked during the past week. Two new wildcat tests were located in the East Central Texas counties.

GULF COAST TEXAS—Although wildcatting and leasing are at low ebb, developments in proven fields are furnishing excitement. Among these are a 4,000-ft. extension to the West Ranch field and a new sand in Old Ocean.

LA-ARK-TEX—Wildcat tests in Arkansas have proved disappointing and the second well in the Fouke field has much less sand thickness than the discovery. An oil prospect is being tested in Harrison County, Texas.

ILLINOIS—Interest in the state was directed toward Bond County where National Petroleum Co. was attempting to complete its No. 1 Spindler Investment Co. in the Misener sand. The well would open a wide area to exploration as well as providing Bond County with its first important field.

KANSAS—Pool openers were completed in Section 8-14-12w, Russell County, and Section 20-16-10w, Ellsworth County. New wildcats were reported in Barber, Butler, Cowley and Ellsworth counties.

FOREST CITY BASIN—Two pool openers were near completion in Richardson County, Nebraska, one 9 miles north of the Falls City pool, the first Nebraska producing area, and one 10 miles west of Falls City. A shallow gas pool was discovered in Clinton County, Missouri.

OKLAHOMA—Gilcrease sand and Hunton lime was found productive in a wildcat near Castle, Okfuskee County. The south end of the Fish pool, Seminole County, was extended ¼ mile eastward, and a discovery well ¾ mile northwest of Fish was showing for about 200 bbl. daily in Cromwell sand.

Completions in All Fields

(Week Ended July 13, 1940)

	Oil	Gas	Dry	Total	1940 total comp. to date	1939 total comp. to date
N. Y., Pa., and W. Va.	64	18	3	85	2,114	1,663
Ohio	8	6	7	21	607	510
Indiana	8	1	2	11	200	126
Kentucky	5	2	5	12	267	344
Illinois	76	0	20	96	2,008	1,843
Michigan	7	3	18	28	683	717
Kansas	38	0	7	45	992	640
Oklahoma	16	3	27	46	1,018	996
Texas:						
North Central Texas	36	0	30	66	1,683	1,305
West Texas	41	0	2	43	1,183	1,008
Texas Panhandle	9	0	0	9	321	212
East Texas	5	0	0	5	141	270
East Central Texas	4	0	1	5	138	139
East Texas Border	0	0	2	2	39	40
Gulf Coast Texas	19	0	1	20	705	740
Southwest Texas	22	1	7	30	1,194	1,272
Total Texas	136	1	43	180	5,404	4,986
North Louisiana	10	1	4	15	329	281
Gulf Coast Louisiana	8	0	6	14	524	318
Total Louisiana	18	1	10	29	853	599
Arkansas	3	0	1	4	108	127
Montana	5	0	1	6	100	76
Wyoming	2	0	1	3	80	50
Colorado	0	0	0	0	12	5
New Mexico	4	0	2	6	367	325
California	14	0	0	14	576	487
Total United States	404	35	147	586	15,302	13,494
Total previous week	402	41	129	574		
Week ended July 15, 1939	333	42	131	506		

Outstanding Fields—Highlights

(Week Ended July 13, 1940)

FIELD—	Rigs up	Wells drlg.	Weekly oil completions	Initial prod.	Total No. oil wells	Daily av. prod.
TEXAS						
K.M.A.	12	40	6	3,758	1,412	29,128
Wasson-Bennett	15	44	9	8,992	313	28,567
Ector County	20	35	12	11,628	883	36,497
Hull-Silk	17	46	3	5,929	307	8,349
Jones County	5	16	3	332	638	6,200
East Texas	13	6	5	212	26,011	374,746
OKLAHOMA						
Oklahoma City	1	10	0	855	100,500	
Cement	2	16	0	313	7,100	
KANSAS						
Bornholdt	3	21	5	1,651	87	2,205
Barnett	0	11	3	1,000	105	6,225
Silica	1	10	2	700	534	10,700
Trapp	2	12	3	623	554	11,900
NEW MEXICO						
Eddy County	7	49	3	135	592	16,450
Lea County	14	37	1	145	2,504	88,810
LA-ARK-TEX						
Cotton Valley, La. (deep)	1	2	1	216	162	12,885
Olla, La.	0	9	1	316	18	1,905
MICHIGAN						
Allegan County	6	21	1	100	502	7,672
Kent County	4	11	3	152	328	11,642
ILLINOIS						
Salem	28	82	24	18,233	2,164	224,725
Centralia	2	26	10	26,463	837	99,425
Louden	10	37	12	3,644	1,549	74,101
Other basin fields	61	246	36	8,633	2,252	78,953
Old fields	....	.....	....	.....	.....	9,821
MISSISSIPPI						
Tinsley	1	5	1	320	62	7,500

Illinois Operations

By STAFF CORRESPONDENT

Production Drops in Centralia Forcing State Output Down

A decline in the production from the Centralia field for the second successive week forced the total output from Illinois down to 486,025 bbl. daily for the past week. Operators in the Salem field increased their output slightly but not enough to approach offsetting the drop of approximately 20,000 bbl. in Centralia production. Other fields in the state showed only slight changes in output.

Main point of interest in the state was in Bond County where it was reported that the National Petroleum, 1 Spindler Investment Co., NW NW NW 10-6n-2w, was in the process of completion in the Hoeing (Misener) sand. The well also reported saturation in the Benoist. Misener sand was reported at 2,298-2,301 ft., Benoist at 1,009-38 ft., Devonian at 2,330 ft. with casing set at 2,451 ft. and removable pipe set opposite the prospective producing horizons. Electric log showed porosity in the Devonian but no saturation.

There were 76 successful completions and 20 failures reported during the week. Seventy-one new operations were reported with 68 of the tests in already productive fields and 13 of them wildcats. Initial production of the new wells totaled 57,003 bbl. with the bulk of it coming from Devonian completions in Salem and Centralia fields.

25 New Salem Producers

In the Salem pool, there were 24 Devonian completions and 1 new McClosky well; Devonian completions totaled 18,233 bbl. while the McClosky well added 30 bbl. Texas Co. completed 15 Devonian wells in the central and southern parts of the pool for an initial of 11,997 bbl. Magnolia Petroleum Co. completed seven wells for a total initial of 6,941 bbl. and the balance was accounted for by two independent completions. Three attempts to extend the Salem pool westward were failures. Completions in the Fairman and Tonti pools in Marion County totaled three and accounted for 1,030 bbl. initial. There were 13 completions in the Louden field in Fayette County and one in the St. James field. Nine of the Louden completions were Carter Oil Co. wells and the St. James completion belonged to the Texas Co. Total initial for the county was 3,798 bbl.

Pure Oil Co. completed three wells in Jasper County for an initial of 1,998 bbl. and four wells in Wayne County for an initial of 2,211 bbl. Other Wayne County completions, all in the Boyleston area, amounted to three wells and totaled 1,215 bbl. initial.

In the Centralia field several large wells were completed in 35-2n-1w with 10 oil completions being reported for the entire pool with an initial of 26,463 bbl. A lone completion in the Hoffman pool accounted for 94 bbl. There were five abandonments in the Centralia pool and four others elsewhere in Clinton County.

Wabash County had two successful completions for an initial of 171 bbl. and one failure; White County had five oil wells for an initial of 886 bbl. and no failures; Washington County had two oil wells for an initial of 40 bbl.; Edwards County had one well for an initial of 222 bbl.; Hamilton County reported three oil wells for an initial of 642 bbl. and one failure. Coles, Montgomery, Fayette, Clay, Wayne, and St. Clair counties each reported an unsuccessful attempt.

Fayette County led in new work with Carter Oil Co. starting five and independents two new tests in the Louden field; Texas Co. seven, and Ohio Oil Co. one well in the St. James pool and one outpost to the St. James field by an independent. Marion County reported one new wildcat and one new test in the Tonti field; Texas Co. starting nine and independents two new tests in the southern part of the Salem field, and one wildcat. Falling off of interest in the Centralia field was indicated by the three new tests scheduled for that pool although three more starts were reported in other Clinton County fields and two wildcats were starting.

White County had four new tests, Wayne County had five, and Richland County had three. The rest of the new work was scattered over the southern part of the state.

Several wells were nearing completion in the Irvington pool in 1s-1w and several attempts were being made to extend the productive limits of the field. A Biehl sand producer was in prospect for Edwards when it was discovered that the Herschbach Petroleum, 1 Perkins, NE SW SW 2-3s-10e, had 18 ft. of saturation 1,962-80 ft. after finding dry McClosky at 3,275 ft. The well is a wildcat.

Another well may be completed in the Pennsylvanian sand in White County. It is the Carter Oil, 1 William Questell, SW NE NE 35-6s-9e, about 2 miles south of the Storms field, which is producing from the Waltersburg sand. Both the Waltersburg and McClosky were found dry in the Carter test and the hole is being plugged back to test the sand at 1,390-1,400 ft.

Further strengthening of the Illinois market was seen in the announcement by the Sohio Corp. that the posted price for crude from the Wabash Valley fields would be $1.05 effective August 1. The present price in that area is $1 per barrel.

Possibility that a field exists to the north of the Centralia field was seen when E. F. Jones, 1 Lippert, C S½ SE SE 27-2n-1w, reported recovering a saturated core from the Devonian lime at an unspecified depth. Chattanooga was topped at 2,865 ft. and present total depth is 2,970 ft.

In addition to the completion reported this week, the following wells are producing from the Devonian on the Brookside C.B.&Q.R.R. lease in the Centralia townsite pool: Brookside. 2-D C.B.&Q.R.R. SE SW NE 1-1n-1w, Devonian 2,840 ft., pay 2,881 ft., 3,000 gal. acid, flowed 744 bbl. in 12 hours. Brookside, 7 C.B.&Q.R.R., NW SW NE 1-1n-1w, Devonian 2,828 ft., pay 2,875-85 ft., 3,000 gal. acid, flowed 2,400 bbl. in 24 hours. (June 4, 1940 and June 27, 1940).

Centralia Field—Devonian Completions

Thompson Drilling, 2 Lipport . . . . NE NE NE 35-3n-1w
Pay 2,940 ft., T.D. 2,945 ft., swbd. 2,000 bbl. water and small show oil, abandoned.

Lee, 1 Hoffman . . . . . NW NE NE 35-2n-1w
Pay 2,927 ft., T.D., drilled plug, well flowed 10 or 15 minutes, went dead, abandoned.

Adams, 21-D Copple . . . . . NW SE SW 35-2n-1w
Pay 2,903-12 ft., acid 5,000 gal., flowed 4,440 bbl.

Adams, 20-D Copple . . . . . E½ NE SW 35-2n-1w
Pay 2,889-97 ft., acid 5,000 gal., flowed 5,320 bbl.

Adams, 19-D Copple . . . . . W½ SW SE 35-2n-1e
Pay 2,881-92 ft., acid 5,000 gal., flowed 8,527 bbl.

Adams, 18-D Copple . . . . . E½ SE NW 35-2n-1w
Pay 2,902-11 ft., acid 1,000 gal., flowed 3,018 bbl.

Gulf, 1 Ellerman-Buehler . . . . W½ SE SW 36-2n-1w
Pay 2,919-27 ft., flowed 2,080 bbl.

Tuesday-Buehler . . . . . E½ SW SW 36-2n-1w
Pay 2,904 ft., no acid, flowed 2,195 bbl.

Sims, 2 Dunn . . . . . W½ NW NE 1-1n-1w
Pay 2,889-2,903 ft., acid 1,000 gal., flowed 703 bbl. oil and 176 bbl. water.

Brookside, 3-D C.B.&QR.R. . . . SE SE SW NE 1-1n-1w
Pay 2,893 ft., T.D. 2,901 ft., acid 4,000 gal., 1,032 bbl.

Gulf, 3 Adams-Felton . . . . . S½ NE NW 1-1n-1w
Pay 2,887-2,901 ft., flowed 773 bbl.

Lee, 2 Allison . . . . . SE SE NE 12-1n-1w
Pay 2,916-24 ft., acid 1,000 gal., flowed 183 bbl.

Hoyleton O.&G., 1 L. M. Coe . . . . . SE SE SW 13-1n-1w
Abandoned at T.D. of 72 ft.

Simmel, 1 Noe . . . . . SW NE NW 13-1n-1w
Pay 2,939-45 ft., acid 1,000 gal. and 2,000 gal., flowed 387 bbl. fluid, 60% water.

W. D. Morgan, 1 Foster . . . . . NW SW NW 7-1n-1w
Total depth 2,450 ft., abandoned.

Magnolia, 1 Wollenwebber . . . SW SW SW 25-2n-1w
Pay 2,945 ft., T.D. 2,948 ft., abandoned.

Bonton, 1 Hy Keister . . . . . SE SE SE 26-2n-1w
Abandoned derrick. Total depth is 2,970 ft.

Coles County

East Oakland Synd., 1 Temple SW SE NE 36-14n-10e
Devonian 915 ft., Trenton 1,965 ft., T.D. 2,290 ft., pumped 2 bbl. oil and some water, abandoned.

Clark County

There was one first report in Clark County, Webster & Gaushin starting work on their 1 Unnamed, NE NW NE 32-11n-14w.

Montgomery County

O. W. Burroughs, 1 Kilton . . . SE NW SE 31-11n-5w
St. Louis 735 ft., T.D. 944 ft., abandoned.

Macoupin County

W. A. Steward started work on his 1 Carlinville National Bank, NE NE NE 35-9n-8w, a cable-tool wildcat test.

Fayette County

One wildcat was started in Fayette County, Carter Oil Co. was starting five new tests in the Louden field and there were two additional tests reported by independents. In the St. James field, Texas Co. was starting seven Weller sand tests and Ohio Oil Co. one test. Bulk of the new work in Louden was in the north end of the field while the west side of the St. James pool was receiving the attention.

Completions—Louden Field

Whisenant et al, 23 Lilly . . . . . NW NW SE 16-8n-3e
Cypress 1,477 ft., shot 30 qt., 1,500-16 ft., pumped and flowed 298 bbl.

Carter, 11 Tom Wright . . . . . SW NE SE 20-8n-3e
Cypress 1,461-1,509 ft., and Bethel 1,556-84 ft., 40 and 10 qt. shot, pumped 174 bbl., T.D. 1,585 ft.

Babcock, 3 J. L. Rhodes . . . . . NW SE SE 27-8n-3e
Bethel 1,595, 20 qt. shot, pumped 35 bbl. oil, 15% water, T.D. 1,611 ft.

Babcock, 1 J. L. Rhodes . . . . . NE SE SE 27-8n-3e
Cypress 1,514 ft., Paint Creek 1,563 ft., shot 40 qt., 1,572-88 ft., T.D. 1,610 ft., pumped 38 bbl.

Babcock, 5 Rhodes . . . . . SE NE SE 27-8n-3e
Cypress 1,502 ft., Bethel 1,590 ft., T.D. 1,607 ft., 40 qt. shot, 1,568-76 ft., pumped 45 bbl.

Carter, 4 M. Taylor . . . . . SE NW SW 33-8n-3e
Cypress 1,459-1,506 ft., Paint Creek 1,530-63 ft., Bethel 1,574-90 ft., T.D. 1,592 ft., shot with 40, 60 and 30 qt., pumped 636 bbl.

Carter, 7 Arthur Watson . . . . . SW NE SW 33-8n-3e
Cypress 1,479-1,518 ft., Bethel 1,577-86 ft., shot 10 and 20 qt., pumped 336 bbl.

Carter, 8 Arthur Watson . . . . . NW SE SW 33-8n-3e
Cypress 1,462-1,516 ft., Paint Creek 1,533-65 ft., Bethel 1,581-88 ft., shot 15, 60 and 30 qt., pumped 474 bbl.

Carter, 27 Harvey Durbin . . . . . NE NE NE 8-7n-3e
Cypress 1,486-1,519 ft., Paint Creek 1,546-69 ft., shot 30 qt., pumped 48 bbl.

Carter, 4 E. E. Shelton . . . . . NW NW NW 9-7n-3e
Cypress 1,488-1,527 ft., Paint Creek 1,554-73 ft., shot 20 qt. and 30 qt., pumped 150 bbl.

Carter, 2 B. Kimbrell . . . . . NW NW NW 17-7n-3e
Cypress 1,434-94 ft., Paint Creek 1,520-35 ft., Bethel 1,544-58 ft., shot 30, 20 and 20 qt., pumped 336 bbl.

Carter, 25 H. Durbin . . . . . SW SW SW 4-7n-3e
Cypress 1,491-1,632 ft., Paint Creek 1,557-74 ft., shot 15 and 10 qt., pumped 114 bbl.

Carter, 4 Darrel Durbin . . . . . SE NW NE 8-7n-3e
Cypress 1,462-1,508 ft., Paint Creek 1,541-63 ft., Bethel 1,572-89 ft., shot 15, 15 and 55 qt., pumped 690 bbl. oil and 12 bbl. water.

Sol Simon, 1 A. Woolin . . . . . NW SW SW 19-5n-3e
Cypress 1,758-80 ft., water, abandoned.

St. James Pool

Texas, 6 O. Neathery . . . . . NW SW NE 6-6n-3e
Cypress 1,538 ft., T.D. 1,554 ft., shot 10 qt., pumped 154 bbl.

Jasper County

Pure, 1 R. Bergbower A . . . . . E½ NE SE 16-6n-10e
Fredonia 2,783 ft., T.D. 2,882 ft., acid 2,300 gal., pumped 200 bbl.

Pure, 1 M. P. Redman . . . . . E½ NW NW 16-5n-10e
Fredonia 2,763 ft., T.D. 4,584 ft., P.B. 2,833 ft., pumped 108 bbl. oil and 45 bbl. water.

Pure, 1 Dickerson . . . . . E½ SE NW 17-5n-10e
Fredonia 2,795 ft., T.D. 2,840 ft., flowed 1,690 bbl. naturally through 1-in. choke.

Marion County Completions

Adams O. & G., 13 Wasem A . . . . . NE SE NW 28-4n-1e
Cypress 1,300 ft., Benoist 1,384-1,431 ft., T.D. 1,435 ft., shot 40 qt., pumped 10 bbl.

Salem-Tonti Area

Absher-Booth, 1-C Sisson . . . . . NW NW NW 3-2n-2e
Devonian 3,594 ft., pay 3,592-3,600 ft., shot 17 qt. at 2,020-35 ft. (Aux Vases 1,985-2,070 ft.,) pumped 20 bbl. oil and 20 bbl. water.

Texas, 11 H. Sweney . . . . . SW SW NW 20-2n-2e
McClosky 2,075-2,100 ft., acid 3,000 gal., pumped 30 bbl.

Devonian Completions

Blackstock, 6 M.&I.R.R. . . . . NE NW SW 20-2n-2e
Pay 3,490-97 ft., acid 3,000 gal., flowed 205 bbl.

Texas, 11-A Sweney . . . . . NE NE NW 20-2n-2e
Poor pay 3,445 ft., good pay 3,460-85 ft., acid 3,000 gal., flowed 298 bbl.

Texas, 11-H Sweney . . . . . SW SW NW 20-2n-2e
McClosky 2,075-2,100 ft., acid 3,000 gal., pumped 30 bbl.

Magnolia, 115 J. H. Young . . . . . NE SW SE 21-2n-2e
Pay 3,513-35 ft., acid 4,000 gal., flowed 614 bbl.

Magnolia, 116 J. H. Young . . . . SE SE SW 21-2n-2e
Pay 3,511-35 ft., acid 4,000 gal., flowed 800 bbl.

Magnolia, 37 W. B. Young . . . . SW NE SW 21-2n-2e
Pay 3,500-22 ft., acid 5,000 gal., flowed 960 bbl.

Magnolia, 112 J. H. Young . . . NW NE NW 28-2n-2e
Pay 3,495-3,510 ft., acid 4,000 gal., flowed 1,182 bbl.

Magnolia, 117 J. H. Young . . . . NE NE NW 28-2n-2e
Pay 3,506-30 ft., acid 4,000 gal., flowed 1,699 bbl.

(Continued on Page 87)

North Louisiana, Arkansas

By GEORGE WEBER

Two Wildcat Failures, Thin Sand at Fouke, Arkansas

SHREVEPORT, La., July 15.—Wildcat failures in Arkansas overshadowed other developments of the past week in the Ark-La-Tex area, but a slight gas showing in a Caddo Parish wildcat, and reported oil shows in a southwest outpost to the Waskom gas-condensate field of Harrison County, Texas, partially offset the Arkansas failures. The wild gasser at Olla, La Salle Parish, was under control by the end of the week, having begun to crater.

Arkansas

South Arkansas' most interesting current wildcat, Standard of Louisiana, 1 Zimmerman, located near Wesson, Union County, last week reached the Smackover lime at 7,885 ft., but encountered salt water in the porous oolitic zone in the top of the formation at 7,893 ft. The test was then plugged back to 7,250-7,540 ft., and plug was drilled out to 7,324 ft. Operators were underreaming at 7,316-24 ft. at week's end to make a drill-stem test at that depth. The wildcat was considered a good possibility for a Smackover lime discovery, since it encountered shows of oil in thin streaks in the Cotton Valley formation above the Smackover lime.

Another wildcat disappointment in South Arkansas was the Barnsdall, 1 El Dorado & Wesson R. R. Co., located in 5-19-18, Columbia County. This test topped the Smackover lime at 8,678 ft., and porosity at 8,691 ft., and on a drill-stem test made at 8,695-8,715, 3,275 ft. of salt water was recovered in 20 minutes. Operators are arranging to deepen the test, now bottomed at 8,715 ft.

Fouke Field

In an offset to the discovery well, Standard Oil Co. of Louisiana last week encountered 4 ft. of oil-saturated sand at 3,570-74 ft. in 2 Sturgis, Miller County, and later cored 5 ft. of oil sand at 3,653-58 ft. The test is bottomed at 4,055 ft., where an electrical survey was being run late this week, preparatory to setting casing and testing. The test, a south offset to discovery is disappointing, when compared to the 25 ft. of effective oil section found in discovery.

North Louisiana

The Olla wild well, Placid, 19 Louisiana Central, which blew out last week and ran wild, was under control late this week, flowing gas through a 2-in. valve on the blowout preventer. The test blew out while drilling at 3,312 ft., and while it was believed at first that a deeper sand discovery was indicated, this possibility cannot be proven yet. The well is located in an east offset position to the Placid Oil Co. gas well which resulted in both oil and gas production 2½ miles south of the Olla field proper, most recent oil field discovery in La Salle Parish.

Olla was extended one location to the southeast by completion of the Arkansas Fuel Oil 1 Cruse. A 2½-mile north outpost, G. W. Ziegen, 1 Louisiana Central, located in 36-11-2e, was abandoned after topping the Wilcox formation at 1,592 ft., and finding no shows to a total depth of 2,511 ft.

Caddo Wildcat

J. M. Conner, 1-A Williams, located near Spring Ridge, 3-15-15, Caddo Parish, showed gas on three drill-stem tests during the past week, and was shut down awaiting orders at the week end at a total depth of 5,138 ft. The first drill-stem test, at 4,980-5,021 ft, showed recovery of 300 ft. of mud and 150 ft. of salt water with a slight show of gas in 40 minutes. Another test made at 5,050-96 ft., also tested a show of gas, as did one made at 5,120-38 ft., which showed gas together with a recovery of 700 ft. of salt water in 45 minutes.

Interest in the De Soto Parish-Shelby County sector of the Louisiana-Texas border will gain as a result of an agreement between Shell Oil Co., Inc., and United Gas Pipe Line Co., whereby United will drill two 6,500-ft. Travis Peak wildcats on Shell blocks; United to retain gas rights and Shell the condensate rights. United agrees to turn over to Shell for cost of drilling the well should either one prove to be oil productive. The Shelby County test will be drilled first, followed by one in De Soto Parish. Both are located near Logansport, which is believed to be situated over a large gas-condensate field, producing at Joaquin, Shelby County, and in a De Soto Parish test, several miles to the east.

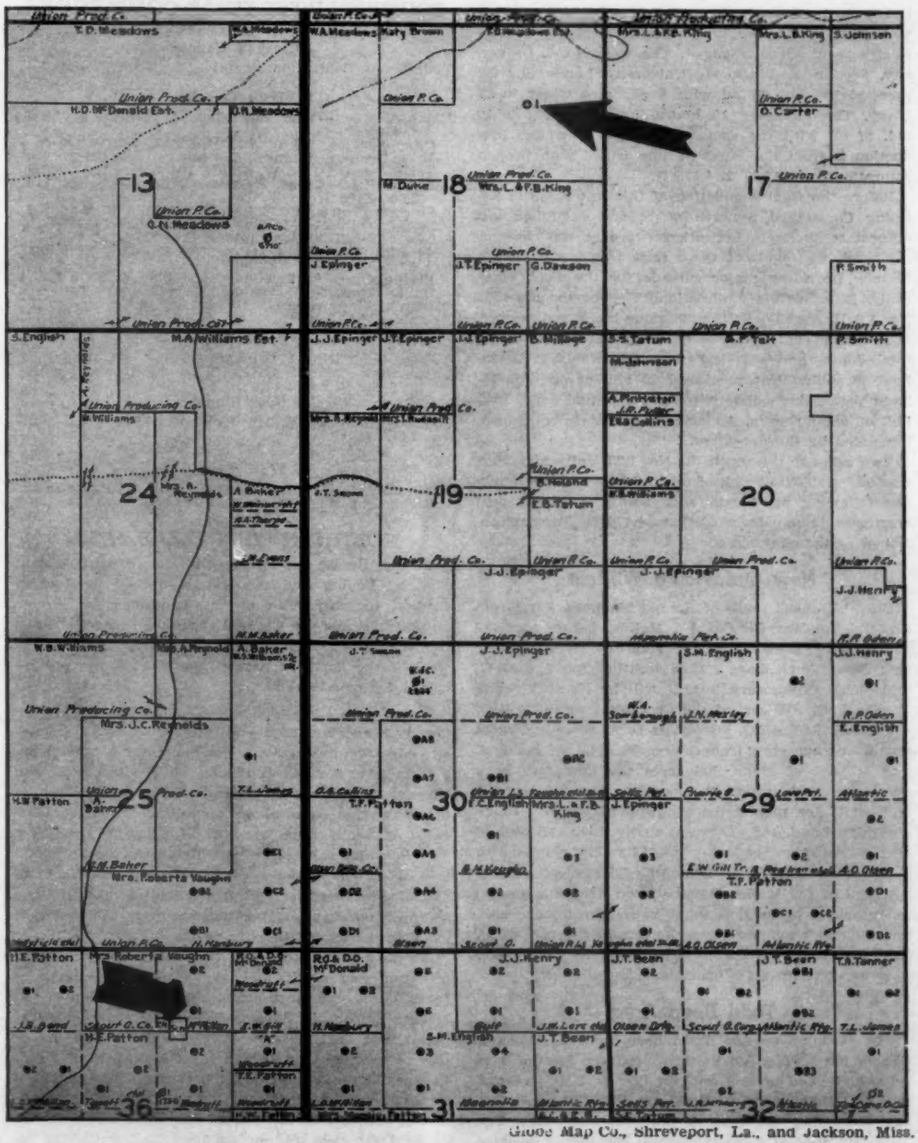
Lisbon Test

Union Producing Co. has spudded No. 1-A Meadows, a north outpost test to the Lisbon field, which will explore the deep horizons and possibly extend the gas-condensate production discovered in the field proper last year by Lisbon Exploration Co.

East Texas Border

A reported showing of oil is inciting considerable interest in the Arkansas-Louisiana Gas, 1-C Abney, James Shandoin Survey, Harrison County. The test is located 1½ miles southwest of nearest production in the Waskom gas-condensate field. After perforating at 6,186-98 ft., in the Travis Peak formation earlier this week, operators tested salt water, and plugged back and perforated at 600-74 ft. The last section shot is reported to have showed nearly 5,000,000 cu. ft. of gas after washing in, together with about 65 bbl. of oil. The test may prove to be a gas-condensate producer

(Continued on Page 92)



Globe Map Co., Shreveport, La., and Jackson, Miss.

Union Producing Co. is spudding No. 1-A Meadows, a north outpost to the Lisbon field, Claiborne Parish, Louisiana, which test will explore the deep horizons which showed oil and gas in the Lisbon Exploration, 1 Vaughn, indicated by the smaller arrow to the south

Pool Opener Is Completed in Southern Andrews County

By R. MARNE SANFORD

MIDLAND, Tex., July 15.—The final and official completion of southern Andrews County's wildcat field opener, together with the staking of a new deep Ordovician wildcat in northern Pecos County and continued activity in the link area of the Slaughter and Duggan fields, led the week's activities in the West Texas portion of the Permian basin. A total of 41 new oil wells were completed during the week in the West Texas district, together with two dry holes. There were 23 completions in the northern part of the West Texas Permian basin, Yoakum County leading with 9 and Hockley County next with 5, and 18 completions in the southern part of the basin. Ector County led the southern part of the basin with 12 new wells gaged.

Southern West Texas Basin

In southern Andrews County and southwest of the Fuhrman field, the indicated field discovery of Helmerich & Payne, Inc., and Atlantic Refining Co. has finally been officially gaged. The well, No. 1 University, Section 1, Block 11, University Lands Survey, pumped 168 bbl. of oil with 9 per cent water in 24 hours. The following 20 hours the well pumped 46 bbl. of oil with the same percentage of water. Production is from the Permian lime drilled with broken saturation from 4,350 to 4,475 ft.

Before the final completion of this test Atlantic Refining Co. staked a north offset and a 2-mile-south outpost to the well. Indications were at the close of the week that both of these tests would make wells thereby providing major spreads for the field, especially in a southerly direction. The north offset is No. 1-2 University, Section 2, same block and survey. It has been shot with 860 qt. from 4,260 to 4,500 ft., total depth, and was last reported swabbing. A 24-hour swabbing test recovered 70 bbl. of oil. The 19-hour period immediately following netted only 18½ bbl. of oil, however. An acid treatment is being contemplated by the operators.

Two miles to the south the No. 1-23 University, Section 23, swabbed 55 bbl. of oil in 2 hours through tubing following an 800-qt. shot and a 2,000-gal. acid treatment in pay from 4,248 to 4,470 ft. Testing continued as the week closed.

New Ordovician Wildcat

Only 1¼ miles south of the old Magnolia Petroleum Co. and Tex-Mex Oil Co., 1-A McKee, failure at 6,267 ft. in 1938, Taubert, McKee and Siemoneit Drilling Co., Fort Worth, have staked location for a 6,300-ft. Ordovician exploratory test. It will be No. 1 Virginia W. Crockett, SW cor. of the Crockett tract in Section 4½, Block 3, H.&T.C. Survey. It is on acreage farmed out by the operators from George T. Abell, of Midland, and is part of about 700 acres the operators have checkerboarded around the location. The old No. 1-A McKee failure topped the Simpson of Upper Ordovician high but found an exceptionally thick section and checked considerably low on the Ellenburger lime with a top of 6,102 ft. About 9 months following the abandonment of the McKee test the Apco field was opened to Ordovician production about 10¾ miles to the south. Several major-company lease holders in the vicinity of the new location have donated dry-hole money and it is expected to start operations immediately.

Todd Deep Area

The recently opened Todd deep field in Crockett County has been given its third producer for the largest initial yield of any well in the field. It is Continental, 4 Todd, Section 29, Block WX, G.C.&S.F. Survey, extending the field ¼ mile to the south. The well, bottomed at 5,795 ft., flowed 580 bbl. of oil in 4 hours to rate a daily potential of 3,480 bbl. The field is producing from a crinoidal lime of the Strawn series of Pennsylvanian age. The No. 1 Todd, a deep wildcat in the area, was dry, while Nos. 2 and 3 Todd were both completed for potentials exceeding 1,000 bbl. daily. A steady drilling program is being pursued by the operating company in the field.

New Wildcats

In Ward County Sinclair Prairie Oil Co. has announced definite location for its wildcat test which was first reported 2 weeks ago. It is to be No. 1 Wirt Davis, located 330 ft. from the northwest line and 2,310 ft. from the southwest line of Section 32, Block 4, H.&T.C. Survey. It is contracted to the 3,100-ft. level.

Terrell County was given a new operation when E. A. Thomasson located his No. 1 Phelps, SE cor. Section 73, Block 1, I.&G.N. Survey.

SOUTHERN WEST TEXAS COMPLETIONS

(24-hour gages)

Crockett County

Todd deep field: Continental, 4-B Todd, 3,480 bbl., 5,755-95 ft.

Ector County

North Cowden field: Barnsdall, 11 Smith, 907 bbl., 4,060-4,210 ft.
Cities Service, 4-B Wight, 1,196 bbl., 4,050-4,225 ft.
M. J. Delaney, 8 Smith, 753 bbl., 4,140-4,430 ft.
Texas Pacific, 1 R. W. Smith, 101 bbl., 4,150-4,200 ft.
Johnson field: Great Western, 2 Johnson, 992 bbl., 3,900-4,125 ft.
Sinclair Prairie, 4-C Johnson, 313 bbl., 4,106-80 ft.
Sunray Oil, 2-A Johnson, 175 bbl., 4,093-4,157 ft.
Texas Co., 1 Johnson, 320 bbl., 4,035-4,145 ft.
Goldsmith field: Phillips-Pure, 93 Cowden, 1,517 bbl., 4,108-55 ft.
Phillips-Pure, 95 Cowden, 1,566 bbl., 4,105-55 ft.
Phillips-Pure, 96 Cowden, 3,181 bbl., 4,120-73 ft.
Jordan field: Snowden & McSweeney, 4 University, 607 bbl., 3,537-3,607 ft.

Pecos County

Tobarg field: Rife, 17 Tippett, 13 bbl., 415-418 ft.
Taylor-Link field: H. G. Eastham, 3-C University, dry at 1,646 ft.

Upton County

McElroy field: Gulf, 218 McElroy, 4,843 bbl., 2,601-2,860 ft.
Gulf, 220 McElroy, 1,396 bbl., 2,559-2,790 ft.

Ward County

Estes field: Gulf, 135 Estes, 1,670 bbl., 2,472-2,695 ft.
Richardson, 4-B University, 408 bbl., 2,530-2,735 ft.

NORTHERN WEST TEXAS BASIN

The continued linking steps of the Duggan field in Cochran County and the Slaughter field in Hockley County, together with the announcement of a new outpost test for the Cedar Lake field in northeastern Gaines County, highlighted the developments of the week in the northern part of the West Texas portion of the Permian basin.

Texas, 1-F Mallett, Labor 25, League 51, Scurry County School Lands, 2½ miles southwest of the western edge of production in the Slaughter field and approximately 4 miles southeast of production in the Duggan field, reported a flow of 64 bbl. of oil in 5 hours through ⅞-in. choke on tubing landed at 5,049 ft., 10 ft. off bottom. The well is hailed by some as a new field discovery. However, it is only a mile northeast of a lone producer drilled about 2 years ago to extend the Duggan field production 5 miles to the south. The Texas Co., 1-F Mallett, offers the best link yet drilled between the two fields.

About 4 miles north of the Texas Co.'s indicated producer and about midway between the northern parts of the two large fields, Magnolia Petroleum, 1-B Mallett, Labor 13, League 50, Scurry County School Lands, was drilling below 4,237 ft. The completion of this test, together with the No. 1-F Mallett of Texas Co., would remove all doubt that the fields might be on separate structures.

A ½-mile northwest outpost has been staked to the Cedar Lake field of northeastern Gaines County by Stanolind Oil & Gas Co., discoverer of the field last year. It is No. 1-B S. Riley, located in the SE cor. of Section 9, Block H, D.&W. Survey. It is 2 miles south of the No. 1 Riley, completed shortly after the discovery well was gaged. Stanolind has one well in the completion stages in the field, one preparing to spud and two locations staked.

NORTHERN WEST TEXAS COMPLETIONS

(24-hour gages)

Andrews County

New field opener: Helmerich & Payne, 1 University, 168 bbl., 4,350-4,475 ft.

Cochran County

Duggan field: Magnolia, 1 Mallett, 907 bbl., 4,997-5,038 ft.
Gulf, 31 Mallett, 100 bbl., 3,243-4,053 ft.

Gaines County

Seminole field: Amerada, 4 Riley, 932 bbl., 5,068-5,250 ft.
Atlantic, 8-B Riley, 973 bbl., 5,117-5,225 ft.
Magnolia and Atlantic, 2-221 H.&J., 714 bbl., 5,058-5,253 ft.
Magnolia and Atlantic, 8-265 H.&J., 584 bbl., 5,142-5,303 ft.

Hockley County

Slaughter field: Honolulu, 8-21 Slaughter, 645 bbl., 4,930-5,000 ft.
Murchison, 6 Slaughter, 858 bbl., 4,931-5,000 ft.
Richardson, 3 Slaughter, 1,112 bbl., 4,890-4,985 ft.
Stanolind, 11-B Slaughter, 342 bbl., 4,975-5,030 ft.
Stanolind, 14-B Slaughter, 551 bbl., 4,905-90 ft.

Howard County

Snyder field: Ennisbrook Oil, 21 Texas Land & Mtg., abandoned location.
Wildcat: Magnolia, 1 O'Daniel, dry at 3,750 ft.

Scurry County

Sharon field: Ordovician Oil, 1 Burney, 246 bbl., 2,412-61 ft.

Terry County

Slaughter field: Gulf, 3 Mallett, 1,126 bbl., 5,015-35 ft.

Yoakum County

Wasson field: Aloco Oil, 9-B Willard, 797 bbl., 4,949-5,230 ft.
Anderson-Prichard, 2 Nelson, 303 bbl., 4,920-5,144 ft.
Anderson-Prichard, 7 Spearman-Willard, 900 bbl., 4,910-5,115 ft.
Anderson-Prichard, 8 Spearman-Willard, 2,048 bbl., 4,880-5,160 ft.
Honolulu Oil, 1-803 Sadie O'Dowd, 817 bbl., 5,060-5,165 ft.
Mabee Oil & Gas, 5-B Willard, 1,290 bbl., 4,880-5,175 ft.
Shell, 16-A Baumgart, 1,181 bbl., 4,870-5,195 ft.
Shell, 16-E Baumgart, 1,392 bbl., 4,880-5,173 ft.
Shell, 10 Roberts, 1,264 bbl., 4,860-5,194 ft.

SOUTHEAST NEW MEXICO COMPLETIONS

Eddy County

Danciger, 6-A Turner 18-17s-31e
Flowed 100 bbl. through tubing, naturally, 3,440-94 ft.
Leo R. Manning et al, 1 McClay 21-18s-30e
Flowed 7 bbl. through tubing at 2,820 ft. Old well drilled deeper to 3,235 ft.
Barney Cockburn, 1 State 16-18s-31e
Pumped 27 bbl. 3,508-31 and 3,457-54 ft. T.D. 3,597 ft. Old well drilled deeper from 3,303 ft. to 3,597 ft.

Lea County

Skelly, 6 E. C. Hill 6-21s-27e
Flowed 145 bbl. through 15/64-in. choke at 3,640-3,728 ft.

TEXAS PANHANDLE

AMARILLO, Tex., July 15.—A total of nine new oil wells were finaled in the Texas Panhandle fields during the past week, there being eight new locations listed. For the first time in several weeks no new gas wells were completed in the district, nor were any oil completions reported for the district's most active county, Hutchinson County. Three of the new wells were in the Skellytown field of Carson County, four in the Pampa field of Gray County and two in the Shamrock field of Wheeler County.

Holding the attention of the wildcats active in the area was the Indian Territory Illuminating Oil Co.'s test in Sherman County. It is No. 1 S C. Bryant, C NW Section 369, Block T-1, T.&N.O. Survey. Several weeks ago casing was perforated for testing purposes from 3,975-88 ft. A 60-qt. shot was administered and the casing was blown in two at 2,960 ft. At last re-

(Continued on Page 74)

By
DAL DALRYMPLE

Open Second and Third Pools In Nebraska; Kansas Strikes

ST. JOSEPH, Mo., July 15.—The second and third oil pools have been discovered in Richardson County, Nebraska, a fourth producer was believed near completion in the Falls City pool, the second producer is on the last lap of its production test to qualify for the $15,000 bonus offered for the first Nebraska oil well, and several tests were drilling or preparing to start at various locations in the district.

Indian Territory Illuminating Oil Co. opened the third Nebraska pool at its No. 1 Schaible-Kuttler, C NE SW Section 22-2n-16e, about 3 miles south of the village of Shubert and 9 miles north of the Falls City pool. It was flowing 1 bbl. of oil naturally from Hunton lime topped at 2,433 ft., and penetrated to 2,452 ft. This is considered an excellent natural showing, porosity was good and other features indicate it will be a comparatively large producer. It was acidized Monday with 500 gal., and operators were prepared to reacidize with an additional 1,000 gal. if necessary. Results of acidization in the Falls City pool have been highly satisfactory.

The second pool in the county was opened at Uhri Oil Co.'s No. 1 Ogle, NE NW SE SE Section 9-1n-14e, about 4 miles west of town of Salem and 10 miles west of the Falls City pool. After drilling to 2,260 ft., about 18 in. in Hunton lime, it was acidized with 500 gal. and oil rose 2,000 ft. in the hole. It was reported to have swabbed at the rate of 300 bbl. daily. The first sale of oil from the well was made to the town of Humboldt, where it was to be used for street surfacing. Gravity of the oil is 30.5 degrees, according to an announcement. Some water has been coming in with the oil, but operators believe it is through a hole in the casing above the pay zone. Five-inch casing was set at 2,256 ft. The Uhri company was expected to announce a new location this week.

Pawnee Royalty Co., discoverer of the Falls City pool, was expected to qualify for the bonus of $15,000 offered by the state for the first oil well completed in Nebraska that produced 50 bbl. or more daily for 60 consecutive days. Its No. 1 Bucholz, C NW SW Section 17-1n-16e, second producer to be drilled in the state, has about 8 days to go to complete the 60-day test and it gave no indication of failing to make the grade. It has produced about 11,000 bbl. of oil from Hunton lime at total depth of 2,232 ft., flowing 332 bbl. daily on initial tests. The discovery well, Pawnee's No. 1 Boice, Section 18-1n-16e, failed to complete the 60-day test because of clogged hole and water encroachment.

The fourth producer in the Falls City pool was nearing completion at Pawnee's No. 1 Keim-Workman, C NE SE Section 18-1n-16e, west of No. 1 Bucholz. It found Hunton lime at 2,286 ft. and had good showings of oil in cores to 2,293 ft. Pipe was being cemented preparatory to testing. Structure drops sharply between the Bucholz and Keim-Workman wells, the lime being topped at 2,217 ft. in the former.

Another Pawnee test, the No. 1 Zentner, C NE SE Section 8-1n-16e, about 1 mile east of the Boice discovery topped Hunton lime at 2,388 ft. and was coring.

Harry Harper and others' No. 1 Sibbernsen, NE NW Section 20-1n-16e, third and largest producer to be completed in the pool, was shut in and attempting to get a market outlet before going on production. It had initial flow of 744 bbl. daily after acidizing Hunton lime at 2,210-36 ft.

Falls City is beginning to take on the aspects of an oil town, two supply stores already having been opened there and preparations are being made to open a third store.

Activity in Missouri

In the Missouri sector of the basin, Brin & Nathan's No. 1 Decker, C NW NW Section 1-61-38w, near Bunker Hill, Holt County, received most attention. It had Mississippi lime at 1,868 ft. and found Hunton lime at 2,211 ft. with a fairly thin Kinderhook shale section. It was drilled to 2,219 ft. and shut down to run 6-in. casing and test.

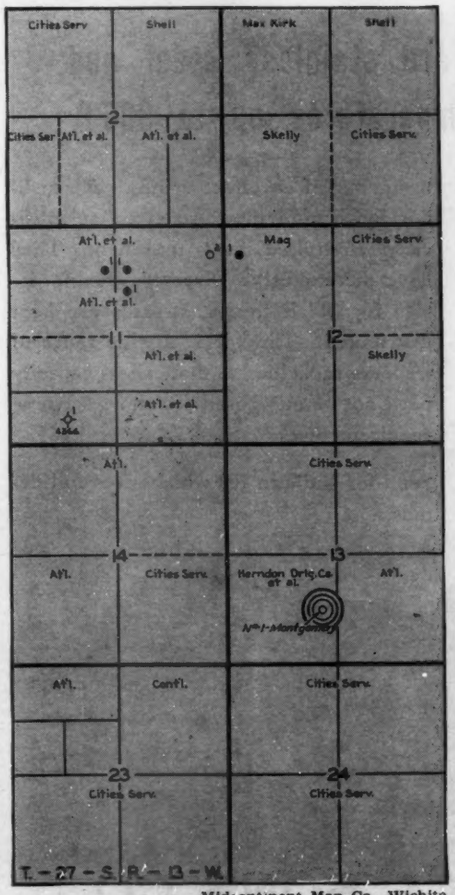
American Oil & Gas Corp.'s No. 1 Thompson, SW SW Section 30-58-31w, DeKalb County, south of Amity, set 12½-in. pipe at 1,140 ft. and was drilling at 1,175 ft. Top of Mississippi lime had not been announced, but indications were that an eroded section had been reached.

A shallow gas pool was reported found in Caldwell County at O. M. Evans' No. 1 Arnote, SW NE SW Section 25-55-29w, about 18 miles east of a gas pool in Clinton County. It was shut in after showing an estimated 2,500,000 cu. ft. of gas at around 400 ft., probably in the upper Cherokee formation. Rock pressure was said to be about 240 lb. Location is on a Skelly Oil Co. farmout about 4 miles west of Polo.

Several other Missouri tests were drilling at routine levels, and drilling at some long-shutdown wells was scheduled to be resumed soon.

In Kansas Fields

In the northeastern Kansas sector of the Forest City basin, Dan McLaughlin's No. 1 Darks, SW NW Section 4-10s-20e, in the McLouth area, Jefferson County, was showing for a gasser. A stray sand was topped in Lower Pennsylvanian at 1,377 ft. and the test was shut down to run casing. It is in the same sand that produced in the No. 1 McLaughlin, gas-discovery well in the same section. Also in the same section, McLaughlin recently completed a Mississippi lime discovery oil well, and the No. 1 Darks is located between the oil and gas discoveries. Same operator has started drilling at No. 1 Frazier, C SW NE Section 22-9-18, Jefferson County. Elevation is 1,081 ft.



Midcontinent Map Co., Wichita

Discovery of a new pool or a long southeastward extension of the Iuka pool, Pratt County, is sought at Herndon Drilling Co. and associates, 1 Montgomery, 13-27-13w, about 1½ miles from Iuka production

Prospecting continues in the shallow Kaths gas area in Johnson County. Frederick J. Kasper, Kansas City operator and discoverer of the pool, suffered burns on one arm when his No. 2 Hammer, NW NE SW Section 33-13-22, found gas in a formation at 689 ft., and the gas ignited.

Developments in western Kansas were featured by completion of pool openers in Russell and Ellsworth counties, and extensions of the Feltes and South Sittner pools.

Black-Marshall Oil Co.'s No. 3 Weber, NL NW SE Section 14-16-12w, seemed to have extended the Feltes pool, Barton County, about ⅝ mile westward. It found Arbuckle lime at 3,378-80 ft., total depth, averaged 1½ bbl. of oil hourly and casing was set in cable-tool hole for production test.

Stanolind Oil & Gas Co.'s No. 1 Ahnert, W½ SE NE Section 10-22-12w, apparently has extended the South Sittner pool, Stafford County, about ¾ mile southeastward. It found porosity and saturation in Arbuckle zone at 3,633-38 ft., and 5½-in. casing was cemented at 3,633 ft. for production test.

Herndon Drilling Co. and others are seeking to give the Iuka pool, Pratt County, a long southeastward extension or open a new pool at No. 1 Montgomery, E½ SW SW Section 13-27-13w. It is about 1½ miles southeast of Iuka production. Material has been moved in.

Estimated Daily Production

Estimated daily production for Kansas for the week ended July 13, and for the preceding week, was as follows:

	Barrels	
	July 13	July 6
Oxford City	750	700
Burrton	7,550	7,800
Ritz-Canton	3,550	3,650
Graber	2,600	2,150
Hollow-Nikkel	1,550	1,400
Lerado	800	450
Voshell	1,700	1,600
Wellington	1,700	1,700
Ellsworth County:		
Lorraine	1,600	1,300
Other pools	2,760	3,265
Rice-Barton counties:		
Bloomer	3,450	4,200
Chase	4,450	4,500
Geneseo	4,150	2,500
Raymond	900	650
Silica	10,700	10,000
Keesling	450	1,300
Wherry	3,450	3,050
Miscellaneous Rice	3,045	4,240
Miscellaneous Barton	8,370	8,695
Trapp district	11,900	12,650
Balance Russell County	19,850	19,850
Sedgwick County	3,300	3,250
Ellis County:		
Bemis	9,800	10,050
Miscellaneous	10,125	10,175
Kingman County	880	540
Stafford County	9,410	11,885
Greenwood County	8,250	8,200
Eldorado	7,400	7,350
Other fields	33,760	35,350
Total Kansas	178,200	182,450

COMPLETIONS, FIRST REPORTS

Wildcats

Russell County: C. L. Carlock and Jones Brothers, 1 Mahoney, S½ SW SW 8-14-12w, opened a productive area about 2¼ miles south of the Bunker Hill pool. It had Lansing lime at 2,943 ft., set 7-in. casing at 2,971 ft., total depth 2,984 ft. It was treated with 4,000 gal. of acid, pumped 186 bbl. of 42-grav-

ity oil in 8 hours and made daily potential of 559 bbl.

Ellsworth County: W. C. Emerich and others, 1 Hagy, W½ SW NE 20-16-10w, about 1 mile southwest of production in the Stoltenberg pool, Ellsworth County, was acidized with 1,000 gal. and 2,000 gal., pumped 80 bbl. of oil in 8 hours and made 24-hour potential of 240 bbl. Gravity of the oil was 43°. Arbuckle lime was topped at 3,325 ft., total depth 3,349 ft., with 5-in. casing cemented at 3,336 ft.

Barton County: Finston & Co. and others, 1 Pichner, E½ NE SW 24-16-11w, between the Prusa and Stoltenberg areas, had Arbuckle lime at 3,376 ft., total depth 3,400 ft., acidized with 1,000 gal., the hole filled with water and it was abandoned.

Herndon Drilling Co. and others, 1 Hitchman, CEL NE NW 1-17-12w, between the Krier and Odin pools, topped Arbuckle lime at 3,338 ft., total depth 3,390 ft., and was abandoned.

Imo Oil & Gas Co., 1-A Eveleigh, CEL SW NE 3-18-14w, near the village of Boyd, was drilling below 2,100 ft.

Cowley County: R. M. Stewart and R. A. Whorton, 1-A Ehmke, W½ NW NW 14-32-3e, about 3½ miles northwest of Winfield, entered Arbuckle lime at 3,451 ft., was bottomed at 3,450 ft., water intruded and it was abandoned.

Barber County: Transwestern Oil Co., 1 Buck, S½ SW NE 35-30-14w, about 3 miles northwest of the Lake City pool, northwestern part of the county, was building rotary rig.

Butler County: Rex & Morris, 1 Jahren, NW NE SE 29-25-8, eastern part of the county and about 2 miles west of the Jackson pool in Greenwood County, set 10-in. casing at 1,516 ft., drilling below 1,665 ft.

Ellsworth County: Alva Billings, 1 Vanek, SW SW SE 25-14-10w, northwestern part of the county, about 6 miles southwest of the village of Wilson, drilling below 340 ft.

Barton County

Bloomer field: Spencer & Yarnell, 9 Patzner, W½ W½ SE 36-17-11w, Arbuckle 3,249-54 ft., total depth, potential 2,980 bbl., calculated.

Silica field: Stanolind, 21 Panning, N½ N½ NW 11-20-11w, Arbuckle 3,276-81 ft., total depth, swabbed 123 bbl. in 1 hour, potential 3,000 bbl., calculated.

Gulf, 6 Zahorsky, N½ SW SE 14-20-11w, Arbuckle 3,265-70 ft., total depth, potential 3,225 bbl., calculated.

Trapp field: Texas Co., 9 Hoffman, N½ SW NW 6-16-13w. Arbuckle 3,339-62 ft., total depth, maximum potential 3,000 bbl., calculated.

Kaiser, 1-A Karst, E½ SE SW 11-16-14w. Set surface pipe.

Butler County

Eldorado field: Walnut Oil Co., 5-A Dillenbeck, NE SE NE 4-26-5. Total depth 2,664 ft., dry.

Miscellaneous: Rex & Morris, 6-A DeMoss, NE NW NW 8-28-7. Bartlesville 2,660-82 ft., total depth 2,684 ft., pumped 27 bbl.

Brandt pool: Simpson Oil Co., 2 Houston, SW NW SW 15-28-7. Moving in machine.

Garden pool: M. & B. Oil Co., 2 Yingling, SW NW SE 29-26-6. Rigging up machine.

Cowley County

Rahn pool: Devonian Oil Co., 1 Knapp, SE SE SW 11-34-5. Total depth 3,200 ft., dry.

West Ferguson pool: Winkler & Koch, 8 Ferguson, NE SW SW 21-30-8, Kansas City 2,155-59 ft., total depth, pumped 25 bbl. of oil and 20 bbl. of water.

Winkler & Koch, 9 Ferguson, NW NE SW 21-30-8, rigging up machine.

Frog Hollow pool: Hawkeye Oil Co., 5 Byers, W½ NE NW 21-32-5. Set surface pipe 40 ft.

Ellsworth County

Bloomer field: Transwestern, 3 Disque, WL SW SE 32-17-10w. Arbuckle 3,243-68 ft., total depth, pumped 1,309 bbl.

Edwards field: Continental, 5 Buehler, NE NE SE 33-17-8w. Arbuckle 3,222-28 ft., total depth, pumped 163 bbl. in 8 hours, potential 488 bbl.

Stoltenberg pool: Gulf, 1 Brasch, W½ NW SE 16-16-10w. Total depth 3,384 ft., swabbed 4 bbl. of oil and 135 bbl. water; temporarily abandoned.

Stanolind, 1-B Stoltenberg, WL SW SE 22-16-10w. Arbuckle 3,301-08 ft., total depth, initial potential 2,070 bbl., with 930 bbl. water.

Ellis County

Bemis field: Cities Service, 14 Collahan, WL NE NE 24-11-17w. Arbuckle 3,378-95 ft., total depth, pumped 15 bbl. in 8 hours, potential 2,755 ft., calculated.

Champlin, 1 Nadley, N½ NW NE 20-11-17w, building rig.

Blue Hill pool: J. J. Hall, 9 Smith, SE NE NW 14-12-16w. Lansing 3,106-60 ft., total depth, pumped 535 bbl. in 8 hours, potential 1,607 bbl.

Burnett field: Bay Petroleum, 4-B Riddler, WL NW SW 1-11-18w. Arbuckle 3,469-77 ft., total depth, potential 3,000 bbl., calculated.

Darby Petroleum Corp., 3-A Peavey, N½ NE SW 13-11-18w. Arbuckle 3,339-40 ft., total depth 3,348 ft., potential 3,000 bbl., calculated.

Dickey Oil Co., 4-B Henderson, WL NW SW 6-11-17w. Arbuckle 3,562-70 ft., total depth, potential 2,193 bbl., calculated.

Greenwood County

Beaumont pool: Moulter, 2 Lewis, SW SW NW 36-27-8. Kansas City 1,745-90 ft., total depth 1,860 ft., pumped 6 bbl. of oil and 60 bbl. of water.

Severy pool: J. A. McClure, 1 Vennis, NE SW SW 8-28-11. Spudded.

McPherson County

Bornholdt field: Carey Drilling Co. and others, 4 Knackstedt, N½ NE SW 30-20-5w. Chat 3,279-3,313 ft., total depth, flowed 330 bbl. in 3 hours, potential 3,000 bbl., calculated.

Central Petroleum Co., 3 Swanson, WL NE NW 18-20-5w. Chat 3,323-56 ft., total depth, flowed 225 bbl. in 1 hour, potential 3,000 bbl., calculated.

Cities Service, 4 Pearson, N½ SW SE 19-20-5w. Chat 3,293-3,365 ft., total depth, pumped 88 bbl. in 8 hours, potential 264 bbl., cutting 3 per cent.

Continental, 3 Knackstedt, N½ SE NW 30-20-5w. Chat 3,286-3,352 ft., total depth, flowed 127 bbl. in 8 hours, potential 382 bbl.

Sunray, 3 Mattson, SW SE NE 30-20-5w. Chat 3,318-66 ft., total depth, flowed 450 bbl. in 2 hours, potential 3,000 bbl., calculated.

Rice County

Bloomer field: Mid-Continent Petroleum, 2 Schlicht, N½ NW SE 6-18-10w. Arbuckle 3,220-35 ft., total depth, swabbed 257 bbl. in 6 hours, potential 3,494 bbl., calculated.

Raymond pool: Atlantic, well in E½ NW SE 20-20-10w. Arbuckle 3,290-3,302 ft., total depth. Pumped 137 bbl. and 4 per cent water in 8 hours, potential 412 bbl.

Wherry field: Brown-Willard Oil Co., 3 Renollet, NE SE SE 36-20-8w. Total depth 3,350 ft., dry.

Russell County

Gurney field: Skelly Oil Co., 3 Rein, N½ NW SW 25-14-14w. Lansing 2,937-47 ft., and 2,990-3,011 ft., total depth, pumped 412 bbl. in 8 hours, potential 1,238 bbl.

Gulf, 1 Fink, EL SE SE 15-14-14w. Lansing 3,016-19 ft. and 3,060-63 ft., total depth 3,083 ft., flowed 390 bbl. in 8 hours, potential 1,171 bbl.

Helmerich & Payne, 3 Boxberger, S½ S½ NE 21-14-14w. Lansing 3,038 ft. and 3,097-3,103 ft., total depth, pumped 916 bbl. in 8 hours, potential 2,750 bbl.

Hall field: Jones & Shelburne, 1 Rein, N½ SE SW 27-14-13w. Lansing 2,915-18 ft., total depth 2,923 ft., pumped 918 bbl. in 8 hours, potential 2,754 bbl.

R. H. Shields, 2 Owens, N½ SE NW 34-14-13w. Lansing 2,923-26 ft., total depth 2,930 ft., pumped 206 bbl. in 8 hours, potential 619 bbl.

Texon Oil Co., 4 Lipprand, SW SE NW 35-14-13w. Lansing 2,843-86 ft., total depth, pumped 420 bbl. in 8 hours, potential 1,260 ft.

South Bunker Hill pool: C. L. Carlock, 1 Kaps, N½ NW NW 17-14-12w. Cellar.

Trapp field: Carter, 11 Detrich, N½ SW SE 8-15-13w. Lansing 2,948-50 ft., 2,962-74 ft., and 3,118-23 ft., total depth 3,225 ft., pumped 33 bbl. in 6 hours, potential 772 bbl., calculated.

W. I. Southern, well in SW SE SE 20-15-13w. Lansing 3,134-39 ft. and 3,081-88 ft., total depth 3,360 ft., pumped 240 bbl. in 8 hours, potential 720 bbl.

Skelly, 15 Neidens, N½ N½ SE 32-15-13w. Arbuckle 3,334-42 ft., total depth, potential 934 bbl., calculated.

Stafford County

South Sittner pool: Stanolind, 2 Krug, E½ NE SW 2-22-12w. Arbuckle 3,563-73 ft., total depth, flowed 49 bbl. in 1 hour, potential 3,000 bbl., calculated.

South Snider pool: Champlin, 1 Smith, EL NE SE 17-21-11w. Simpson 3,367-90 ft., total depth, flowed 188 bbl. in 8 hours, potential 565 bbl.

Zenith field: Deep Rock, 2 Heggy, W½ SW NE 10-24-11w. Viola 3,752-3,808 ft., total depth, flowed 60 bbl. an hour, potential 3,000 bbl., calculated.

Deep Rock, 1 Henry, E½ SE SW 3-24-11w. Rigging up rotary.

Stanolind, 2 Richardson, EL SE NW 10-24-11w. Location.

Stanolind, 2-A Ferris, EL NE SE 15-24-11w. Location.

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Oklahoma Operations

By
DAL DALRYMPLE

Discover Hunton Lime Pool Near Castle in Okfuskee

Discovery of a Hunton lime pool in Okfuskee County, Oklahoma, was assured at Burke-Greis Oil Co.'s No. 1 Dew, NE NE NE Section 9-12-9e, about 6 miles northwest of Okemah. Lime was topped at 3,888 ft., hole was bottomed at 3,909 ft., it flowed 88½ bbl. of light green oil in 21 hours and continued flowing 4 bbl. or more an hour, naturally. First gas found at 3,890 ft. gaged 2,800,000 cu. ft. and increased to about 3,000,000 cu. ft. as hole was deepened.

Gilcrease sand found at 3,297-3,311 ft. also was productive, but the oil was 27-gravity, heavy and black. It was passed up and 7-in. casing was set at 3,315 ft., but some oil from the Gilcrease continued to flow between the pipe. Operators had not decided whether to lower pipe to top of Hunton pay and test or to drill on to Wilcox sand, original goal.

Location is 2 miles north of the village of Castle and about 6 miles northwest of Okemah. A Wilcox sand test drilled in Section 3-12-9 by Gulf Oil Corp. and others had good showings of oil in upper formations and found slight showings in the Wilcox, but failed to make a producer in the deep sand. The Burke-Greis discovery, with a better position on the structure, is given a good chance to be a Wilcox producer if operators decide to drill to that horizon.

Estimated Daily Production

Estimated daily production in Oklahoma for the week ended July 13, and for the preceding week, was as follows:

	Barrels	
	July 13	July 6
Allen	5,325	5,350
Billings	6,100	6,025
Burbank	7,050	7,100
South Burbank	8,200	8,200
Balance Osage	17,000	17,250
Blackwell district	3,500	3,500
Bristow-Slick	5,750	5,750
Chandler	1,000	1,025
Crescent	2,250	2,275
Cromwell	2,950	2,925
Cushing-Shamrock	9,100	9,125
Duncan	3,700	3,750
Edmond	4,125	4,100
Fish	3,100	3,100
Fitts	16,900	17,250
Jesse	2,125	2,100
Graham-Fox	2,500	2,450
Gray	700	750
Healdton	8,850	8,850
Hewitt	3,800	3,850
Keokuk	3,150	3,125
Konawa	1,100	1,100
Lucien	7,950	7,900
Moore	1,775	1,750
Northeastern counties	16,850	17,000
Oklahoma City	100,500	105,750
Olympic	2,100	2,125
Ramsey	3,800	3,800
Sasakwa	1,450	1,475
Sholem-Alechem	2,850	2,825
Seminole district:		
Bowlegs	6,800	6,825
Carr City	2,350	2,350
Dora	2,425	2,400
Earlsboro	4,150	4,175
East Earlsboro	1,850	1,850
South Earlsboro	550	550
Little River	6,700	6,750
East Little River	700	700
Maud	550	550
Mission	1,325	1,300
Seminole	7,100	7,100
East Seminole	1,325	1,300
Searight	2,050	2,100
Total Seminole	37,875	37,950
St. Louis-Pearson	27,250	27,600
Tatums-Tussy	1,850	2,050
Tonkawa-Garber-Thomas	3,800	3,875
Wewoka	1,500	1,525
Yale-Jennings	3,200	3,250
Other pools	80,550	80,450
Total Oklahoma	411,575	418,275

Mid-Continent Petroleum Corp.'s No. 1 Ferguson, NE SW SW Section 18-7-8, discovery well northwest of the Fish pool, Seminole County, flowed 195 bbl. of oil in 22 hours from Cromwell sand at total depth of 3,475 ft. Tubing was being run. It is about ¾ mile northwest of Fish production and is thought to be on a separate structure.

The Fish pool was extended ¼ mile eastward at the south end by Clark and others' No. 1 Barnhart, SW NW SW Section 32-7-8. It found 195 bbl. of oil in 24 hours from Gilcrease sand through perforations at 2,933-43 ft., total depth 3,314 ft. Tubing was being run.

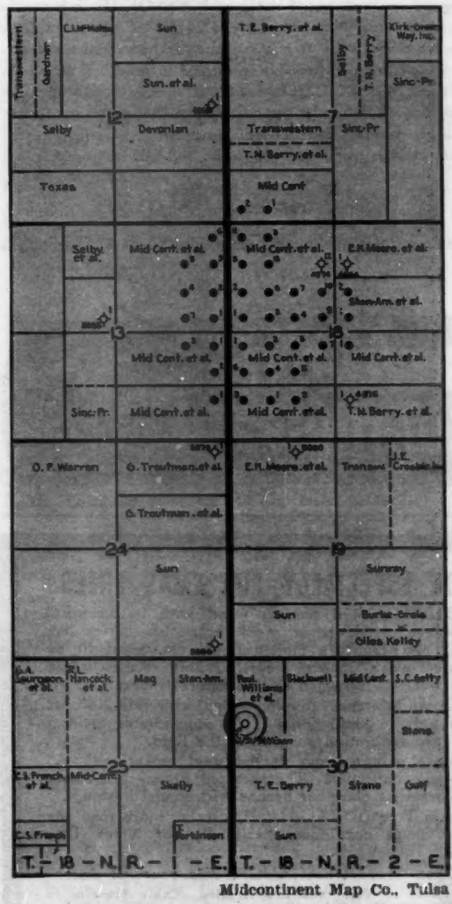
The Cumberland pool in Marshall held attention as four of the tests being drilled in that area neared the pay zone uncovered in the discovery well. Pure Oil Co., discoverer of the pool and owner of 23,000 acres of leases surrounding the pool in Marshall, Bryan and Johnston counties, has changed the numbering of its wells, effecting 40-acre consolidation of 20-acre spacing, corresponding with the system of numbering used in the Vann, Texas, pool.

The discovery well, Pure's No. 1 Quentin Little A, W½ NE SE Section 28-5s-7e, becomes No. 1 Little-100. Changes of drilling wells are as follows: No. 1 Little B, NE SW SE Section 28-5s-7e, to No. 1 Little-101; No. 1 Thomas A, SW NE NW Section 28, to No. 1 Thomas-102; No. 1 Stewart A, SW SE NE Section 28, to No. 1 Stewart-103; No. 1 Crissman, NE NE NE Section 29, to No. 1 Crissman-104; No. 1 Park College, SW SW SE Section 27, Bryan County, to No. 1 Park College-200.

The No. 1 Little-101, due to be the next completion, was drilling below 5,192 ft., believed to be about 68 ft. from top of McLish formation. It was in sand carrying good stains of oil. It had oil and gas showings and broken sand and shale at 5,062-76 ft. and in sand at 5,080-5,101 ft. The No. 1 Thomas-102, was drilling below 4,865 ft., in sand with an asphaltic residue, after getting stains and showings of oil and gas in upper zones. The No. 1 Stewart-103 was drilling in Viola lime below 4,430 ft.; the No. 1 Park College-200 was making hole in Hunton lime below 3,805 ft., and No. 1 Crissman-104 was drilling around 500 ft.

The operating company announced locations for two additional tests in the pool at No. 2 Little-100, SW NW SE Section 28-5s-7e, and No. 1 Little-201, NE SE SE Section 28. The first is a northwest offset and the latter a southeast offset to the discovery.

Paul Williams and others erected rig and were due to start drilling at No. 1 Allison, NW SW NW Section 30-18-2e, wildcat about 1½ miles south of the Ramsey pool, Payne County. It is a Wilcox sand test.



Midcontinent Map Co., Tulsa

Paul S. Williams and others have rig on ground for a Wilcox test at No. 1 Allison, NW SW NW 30-18-2e, about 1½ miles south of the Ramsey pool, Payne County. Map shows development to date in the Ramsey area

COMPLETIONS, FIRST REPORTS

Wildcats

Atoka County: Holly, 1 Johnson, NW NW NE 36-3s-13. Total depth 1,508 ft.; dry.

Beckham County: Fred Coogan, 1 Kinchen, SE SE SE 4-9-25w. Broken dolomite 3,260 ft.; base dolomite 3,463 ft., total depth 3,718 ft., dry.

Lincoln County: Russell and others, 1 Laughlin, SW SW SE 35-16-5. Prue 3,285 ft.; total depth 3,335 ft., dry.

Anderson-Prichard, 1 Smith, SE SW NE 18-15-5. First Wilcox 4,480 ft., second Wilcox 4,514 ft., total depth 4,530 ft., dry.

Logan County: Eason and others, 1 Wells, NE NW NE 15-16-2w. Second Wilcox 5,895 ft., total depth 5,920 ft., dry.

Kiowa County: Dillard, 1 Holcomb, NE NE SW 25-7-19w. Granite wash 1,440-50 ft., total depth 1,508 ft., dry.

Payne County: Summitt Drilling Co. and others, 1 Arnold, NW NE NW 8-19-2e. Wilcox 4,877 ft., second Wilcox 4,962 ft., total depth 4,980 ft., dry.

Pottawatomie County: Thompson Brothers, 1 Truesdale, SE SE NW 31-8-5. First Wilcox 4,349 ft., second Wilcox 4,432 ft., total depth 4,437 ft., dry.

Potack, 1 Taylor, SE SE SW 26-10-4. Sylvan 4,548 ft., total depth 4,612 ft., dry.

Pontotoc County: Morgan, Flynn and others, 1 Brown, SW SW SE 30-3-5. McLish 1,045 ft., total depth 1,435 ft., dry.

New wildcats: Eagle Oil Co., 1 Cheathem, SE SE SE 35-17-9, north Bristow area, Creek County, rigging up standard tools. Southwestern Drilling Co., 1 Dugger, NE SW SW 14-6-18w, about 3 miles southwest of Hobart, Kiowa County, spudded with machine. Wolff, 1 Laughlin, SE NW SW 16-4s-8e, about 5 miles southeast of Milburn, Johnston County, location for 1,600-ft. test. Wilcox Oil & Gas Co., 1 Murphy, NE SE SW 7-14-6, about midway between Sac and Fox and Davenport pools, Lincoln County, location.

Caddo County

Cement field: Sunray Oil Co., 2 Kladaing, SE NW SW 3-5-9w. Total depth 3,706 ft., dry.

Rollins and others, 1-A Rigney, SW SW NW 12-5-9w. Spudded with rotary.

Carter County

Healdton field: Carl Carter, 5 Mobley, SE NE SW 13-4s-3w. Lime 585 ft., total depth 1,310 ft., dry.

McGraw Oil, 1 Smith, NE NE NW 5-4s-3w. Total depth 1,094 ft., pumped 20 bbl.

Hewitt field: Batson, 1 Williams, SW SW NE 20-4s-2w. Set 7-in. casing 1,900 ft., total depth 1,933 ft., pumped 50 to 60 bbl. 33-gravity oil daily.

Sholem-Alechem field: S. & D. Daube, 1 Love-Johnson, SE NE NE 32-1s-3w. Total depth 4,150 ft., pumped 25 bbl.

Cleveland County

Noble field: W. A. Delaney and others, 1 Bakhaus, SE SE NE 12-7-2w. Total depth 7,714 ft., dry.

Coal County

Clarita field: Berry, 1 Franklin, SE SW NE 35-1n-8. Wapanucka 1,782 ft., total depth 1,904 ft., dry.

Comanche County

Lawton area: W. L. Wynn, 1 Lowe, SE NW NW 7-1n-10w. Total depth 256 ft., pumped 8 bbl.

Creek County

Bristow field: Boydston, 1 Rebstein, C NW SE 11-16-9. Layton 1,300 ft., total depth 1,400 ft., dry.

Kellyville area: Standard Drilling Co., 1 Wright, SW NW SW 25-17-10. Wilcox 2,890-2,906 ft. total depth, dry.

Lincreek pool: Brauer, 1 Ary, SW SE 3.-16-7. Set 10-in. casing 38 ft., waiting.

West Arno pool: C. W. Titus, 1 Cloud, SW SW SE 27-14-7. Prue 2,591 ft., total depth 2,630 ft., dry.

Wilcox Oil & Gas, 1 Ah-Sey, SE SW SE 27-14-7. Prue 2,575-95 ft., total depth, dry.

Logan County

Lovell pool: H. P. Gas Co., 1 Matherson, SW SW SW 34-18-4w. Layton 4,808-62 ft., total depth 4,865 ft.,

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gaged 12,000,000 cu. ft. of gas, with 1,650-lb. rock pressure.

Grady County

Knox field: T. H. McCasland, 1-C Wild, NE SE SE 28-3n-5w. Shale 2,615-50 ft., total depth, dry.

Jackson County

Tipton pool: Kerbow & Brittain, 3 Danona, SW NE NW 6-1s-19w. Total depth 3,641 ft., pumped 47 bbl.

Lincoln County

Prague pool: H. L. Berkey, 1 Gragg, SE SE SE 32-12-6. Building rig.

Muskogee County

Transcontinental pool: Leasburg, 5 Quandt, SE SW SW 5-13-16. Total depth 1,776 ft., dry.

Okfuskee County

Weleetka area: Moffett, 1 Shawneego, NE NW NE 25-10-11. Shot in Booch sand, 2,009-24 ft., total depth 2,031 ft., pumped 15 bbl.

Oklahoma County

Jones pool: Magnolia, 1 Borgstrum, NW NW NE 28-13-1e. Cleveland 4,827-37 ft., shot there, total depth 4,848 ft., pumped 83 bbl.
Oklahoma City field: Indian Territory, 14 Emerson, S½ N½ SW 30-11-2w, cellar.

Okmulgee County

Bald Hill pool: A. B. Chain, 3 McLaughlin, W½ SW NE 5-14-14. Total depth 1,760 ft., dry.

Osage County

Falls Dome pool: Continental, 24 Osage, NW SE NE 32-24-8. Total depth 2,700 ft., dry.
Hominy area: Ohio Osage, 1 Osage, SW SW NW 29-22-9. Total depth 2,343 ft., dry.
Osage City pool: Moore Oil, 1 Osage, SW SW NW 35-22-8. Total depth 2,012 ft., initial yield 165 bbl.
South Hickory Creek pool: Millard and others, 3 Osage, SE SE NW 3-28-11. Total depth 963 ft., 88 bbl. This well formerly was reported abandoned.

Payne County

Coyle pool: Texas Co., 1 Vaughn, E½ SE SW 2-17-1e. Wilcox 4,954-76 ft., total depth, set 7-in. casing 4,909 ft., flowed 744 bbl.

Pontotoc County

Bebee pool: Senora, 1-A Standridge, SW SE NW 26-5-4. Viola 2,510 ft., total depth 2,600 ft., sulfur water, abandoned.
Hall, 1 Haskins, SE SE SE 26-5-4. Old well being deepened from 2,500 ft., drilling below 2,597 ft.
Paine, 1 Newbern, SE SW NE 31-5-4. Set 10-in. casing 209 ft., waiting.

Pottawatomie County

Gray area: Vierson, 1 Greenlee, NW SW SW 26-6-4. Shot in sand at 2,983-95 ft., total depth 3,000 ft., set 7-in. casing 2,980 ft., pumped 45 bbl.
St. Louis field: Gene Marko, 1 Kittredge, NE SE 15-7-3. Hunton 4,371 ft., 7-in. casing 4,355 ft., total depth 4,429 ft., acidized with 10,000 gal., flowed 150 bbl.
West King pool: George Butcher, 1-A Taylor, SE NE NE 35-10-4. Hunton 4,230 ft., Sylvan 4,250-75 ft., total depth, acidized with 1,500 gal., flowed 476 bbl. in 19 hours, through choke.

Seminole County

Allen field: Indian Territory, 4 Osborne, SE SE SW 18-5-8. Sand 1,061 ft., total depth 1,106 ft., dry.
Fish field: Winona, 2 Horton, SE SW NE 18-7-8. Rig on ground.
Mission pool: Morgan and others, 1 Hayes, NW NE SE 8-8-6. Rig on ground.
East Seminole field: Alma, 1 Boring, NE NE NW 18-9-7. Hunton 3,955 ft., Wilcox 4,217-30 ft., total depth, perforated at 3,975-4,010 ft., acidized with 1,000 gal., flowed 75 bbl.
Traugh pool: Grisso, 3 Orwig, NE SE SE 15-6-6. Drilling below 510 ft.

Stephens County

Comanche field: George Pace, 5 Dilly, NE NW SW 27-2s-7w. Sand 1,515-20 ft., total depth, pumped 5 bbl.
Empire field: McAlester, 5 Wade, NW SW NE 11-2s-8w. Sand 2,140-45 ft., total depth, pumped 17 bbl. of oil and 6 bbl. of water.
Milroy field: Magnolia, 1 Harley-Unitized, NW NE 24-2s-4w. Hunton 4,090 ft., Sylvan 4,520 ft., total depth 4,525 ft., dry.
Velma pool: Circle K Oil, 1 Parker, SE NE NW 16-1s-5w. Total depth 650 ft., dry.

Texas County

Hugoton field: Republic Natural Gas, 1 White, NE NE NE SW 30-6-15ecm. Total depth 2,805 ft., gaged 24,500,000 cu. ft. gas.
Republic Natural Gas, 1 Ebersole, SE SE SE NW 24 6n-16ecm. Total depth 2,828 ft., gaged 21,000,000 cu. ft. gas.

Texas Panhandle

(Continued from Page 66)

port operators were swedging pipe in an attempt to condition hole for further testing.

TEXAS PANHANDLE COMPLETIONS

(24-hour gages)

Carson County

Skellytown field: Cities Service, 1 Magnolia fee, 492 bbl., 3,075-3,170 ft.
Cities Service, 2 Magnolia fee, 175 bbl., 3,129-80 ft.
Magnolia, 14 fee 244, 342 bbl., 2,980-3,118 ft.

Gray County

Pampa field: Adams & Prime, 1 Cantone-Morse, 75 bbl., 2,480-2,545 ft.
I.T.I.O., 14 Smith, 247 bbl., 3,162-3,275 ft.
Kewanee Oil, 3 McConnell, 18 bbl., 3,115-88 ft.
H. Steckoll, 4 Combs-Worley, 20 bbl., 2,990-3,072 ft.

Wheeler County

Shamrock field: H. Ewtan, 3 Evans, 20 bbl., 2,230-90 ft.
North Fork Oil, 8 Jackson, 79 bbl., 2,165-2,214 ft.

Louisiana Gulf Coast

White Lake, Vermilion Parish Is New Coastal Oil Field

By
NEIL WILLIAMS

NEW ORLEANS, La., July 15.—The White Lake prospect, southern Vermilion Parish, coastal Louisiana, was added to the list of producing fields, as Union Oil Co. of California, 1 Webster White was cleaning out at the close of the week, flowing at the rate of 250 bbl. of pipe-line oil per day through ⅛-in. choke under a tubing pressure of 2,100 lb. It is reported that the gas pressure continues to rise, and the well may have to be killed due to a high gas-oil ratio. Approximately 460 ft. of 2-in. tubing was hung at 10,066 ft. for the production test following a 47-minute drill-stem test through perforated casing at 10,536-42 ft. which recovered 4,700 ft. of 32-gravity oil.

White Lake was discovered by the use of geophysical instruments in 1929 by the Louisiana Land & Exploration Co., and the area has been checked numerous times by several major companies. The present well is located in 17-15s-1e, and is the fourth well to be drilled on the structure, two of which were drilled by Louisiana Land & Exploration Co. and Shell Oil Co., Inc. This is the first well to be drilled in the district by Union Oil Co. of California, which acquired the well and block after Louisiana Land & Exploration Co. had drilled the well below 10,000 ft. The well was drilled to a total depth of 11,098 ft. and the hole was plugged back to 10,658 ft. after an electrical survey showed favorable indications.

The Eola field, Avoyelles Parish, received its second Cockfield sand producer as Amerada, 5 Cerami, flowed an unestimated amount of oil and wash water while cleaning out through perforated casing at 6,430-48 ft. The Cockfield was topped at 6,430 ft. and the well was drilled to a total depth of 6,449 ft. With the producing area of the Wilcox sand fairly well defined, operators in this field have turned their attention to the development of this sand, and it is probable that a twin-well drilling campaign will be started.

On the southeast flank of the Chacahoula dome, La Fourche Parish, Sun Oil Co.'s attempt to open a new producing area around the flanks of this structure failed as No. 2 Cypress tested salt water when tested through perforated casing at 7,987-8,000 ft. The well was drilled to a total depth of 8,016 ft. and casing was cemented following an electrical survey which showed favorable indications in sand at 7,988-96 ft. Tubing is being pulled, preparatory to retesting. Should a second test fail, the hole is expected to be carried deeper.

The Kennilworth field, St. Bernard Parish, received its second dry hole with the abandonment of Vendome Petroleum, 3 Kennilworth Plantation, at a total depth of 11,419 ft. The well is located in 76-14s-14e, and no showings of oil or gas were reported.

On the Chenier prospect, Cameron Parish, Phillips Petroleum Co. was testing No. 1 Miami Corp., after making a series of cement-squeeze jobs at intervals from 10,190-10,215 ft. The well is being completed at 10,200-05 ft., where an electrical survey showed possible gas or distillate production. Location is in 11-4s-6w. Late in the week the well was reported to be flowing gas, distillate and wash water while cleaning out.

West Cote Blanche

In the West Cote Blanche field, St. Mary Parish, Texas Co. was preparing to test a new sand logged in No. 2 State, about ¼ mile north of the discovery well. The well is bottomed at 9,491 ft., and 7-in. casing was cemented at 9,474 ft. Casing was perforated at 5,030-50 ft., and a cement-squeeze job was made before final completion is attempted. Six sands are reported to have been logged at intervals from 3,000 ft. to 6,000 ft.

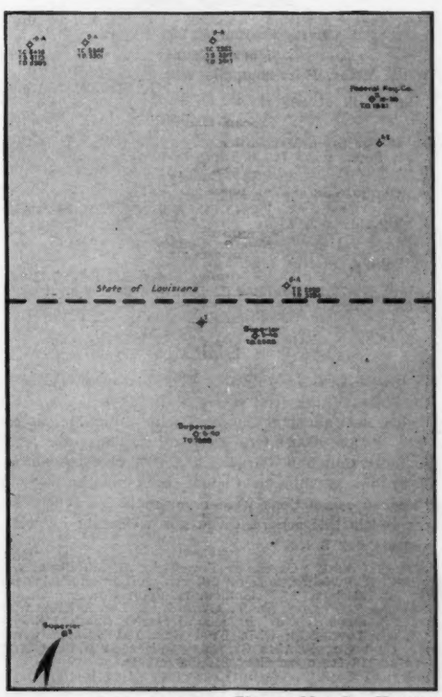
In the Lake Salvador area, Plaquemines Parish, California Co. has reached the pay in No. 1 Delta Minerals, and is preparing for a production test. The well is bottomed at 9,650 ft. and 7-in. casing was cemented on bottom following an electrical survey. The well is located in 2-15s-24e, about 2,000 ft. northeast of the same company's No. 1-7 Delta Minerals which is bottomed at 10,807 ft. where a fishing job has retarded progress.

California, 1 Louisiana Truck & Orange Co., east of production in 15-15s-23e, is bottomed at 8,797 ft. and 7-in. casing was cemented for completion. Details of the core record were not available and it is not known if the well will test the 8,200 or 8,700-ft. horizons.

There were 20 new locations reported for the district the past week, all located in proven fields. With more than 150 rigs operating, the district continues to set the pace in Gulf Coast territory, although there has been a decline in wildcat operations.

Calcasieu Lake

Prospects of opening the first production on the Calcasieu Lake dome, Cameron Parish, were not encouraging as Superior Oil Co. recovered salt water on two production tests at No. 3 State, and at the close of the week was preparing to make another test. This well was drilled to a corrected depth of 9,544 ft., and 7-in. casing was cemented on bottom. Salt water was recovered at 8,567-77 ft., and at 9,450-60 ft., with no showing of oil. A third test was being made at 9,485-95 ft. The well is located in 1-9s-14w, on the southwest flank of the dome, and is the third well to be drilled by Superior, two other wells having been abandoned after encountering rock salt at shallow depths.



Zingery Map Co., Houston

Calcasieu Lake dome, Cameron Parish, showing location of Superior, 3 State, which is in the process of testing

Wilcox production in the Neale field, Beauregard Parish, was extended ¼ mile east as Atlantic, 1 Musser-Davis, flowed 284 bbl. daily through a 13-64-in. choke. The Wilcox section was topped at 8,351 ft. and the well was completed through perforated casing at 8,357-70 ft. Tubing pressure was 520 lb., and shut-in casing pressure 675 lb. Atlantic Refining Co. made location for No. 1 Kay unit in 23-3s-11w.

Continental, 1 Niblett farms, the discovery well of the Niblett field, Jefferson Davis Parish, has been abandoned after an attempt to eliminate salt-water encroachment failed. The well was originally completed through perforated casing at 11,604-24 ft. for an initial production of 100 bbl. distillate per day, but due to salt-water intrusion, the well was killed and an attempt was made to recomplete at 11,064-78 ft. but only salt water was recovered.

Another dry hole was marked up for the Erath field, Vermilion Parish, as Texas, 1 Trahan, about 1 mile southeast of the discovery well was abandoned at 11,771 ft. Approximately ½ mile west of the discovery well, Humble Oil & Refining Co. has derrick up for No. 1 School Board in 16-13s-4e. The abandoned well of the Texas Co. was the third dry hole to be drilled on the structure since the field's discovery.

Vincent, Welch & Nicklos Drilling, 1 McMannus, completed 3 weeks ago as a small producer on the Ritchie prospect, Acadia Parish, is making as much as 30 per cent salt water, and the well may have to be killed and recompleted. The well was completed in approximately 10 ft. of sand bottomed at 3,537 ft., and during a recent 24-hour gage the well flowed 17 bbl. of fluid per day of which 30 per cent was salt water and the balance 15-gravity oil. Tubing pressure was 480 lb. and shut-in casing pressure 1,110 lb. The well was gaged while flowing through a ⅛ and ⅞-in. choke.

DRILLING OPERATIONS ON MISCELLANEOUS WILDCATS

Union Sulphur, 1-A Calcasieu National Bank, Jefferson Davis Parish, 2-8s-4w. Drilling shale 6,141 ft.
Falcon-Seaboard, 1 Folse, Iberville Parish, 2-8s-4w. Drilling shale 10,633 ft.
Gulf, 1 Buras Levee District, Plaquemines Parish, 1-23s-10e. Drilling in sidetracked hole, 9,928 ft.
Sun, 1 Belle Isle, St. Mary Parish, 6-18s-11e. Coring shale 8,355 ft.
Stanolind, 1 State, Bay Junop dome, Terrebonne Parish, 8,450 ft. Reaming shale.

LOUISIANA GULF COAST COMPLETIONS

Ascension Parish

Sorrento field: Sorrento Syndicate, 2 Bernard, 1,454 ft. Dry.

Avoyelles Parish

Eola field: Gulf and others, 4 Mouliere. Perf. casing 8,540-68 ft., 357 bbl., ⅞-in. choke.

Cameron Parish

West Hackberry field: Superior, 2 Kaough. Perf. casing 7,735-73 ft. and 7,809-42 ft., 225 bbl., ¼-in. choke.

Evangeline Parish

Ville Platte field: Continental, 4 Corell, 10,251 ft., 290 bbl., ⅞-in. choke.
Continental, 3 Fontenot, 8,988 ft., 256 bbl., ¼-in. choke.
Danciger, 3 Vidrene. Perf. casing 10,066-10,100 ft., 565 bbl., ¼-in. choke.

Iberia Parish

New Iberia field: Texas, 16 Duhe. Perf. casing 6,824-54 ft., 307 bbl., 12/64-in. choke.

La Fourche Parish

Bayou des Allemands field: Amerada, 4 Gheens. Perf. casing 6,716-24 ft., 138 bbl., various chokes.

St. Martin Parish

Anse La Butte field: Acadian Production, 1 Begneaud. Dry, 2,860 ft.
Iberia Petroleum, 2-A Moresi. Perf. casing 2,855-98 ft., 402 bbl., 12/64-in. choke.

St. Mary Parish

Charenton field: Pan American, 10-B Ecuer. Dry, 1,142 ft.
Hamill & Smith, 1 Eves. Dry, 3,256 ft.

Terrebonne Parish

Bay St. Elaine field: Jefferson Lake Sulphur, 1 Salt Dome Royalty. Dry, 1,260 ft.

Vermilion Parish

Erath field: Texas, 1 Trahan. Dry, 11,771 ft.

Canadian Petroleum Imports

OTTAWA, Ont.—Imports of petroleum, asphalt, and their products into Canada in March were appraised at $2,693,027, an increase of 1.6 per cent over February. Crude imports increased to 55,253,091 imperial gal. from the February total of 50,263,908 gal. Petroleum and its products exported from Canada in March were valued at $19,768, compared with $82,414 in February.

Indiana, Ohio, Kentucky

By
STAFF CORRESPONDENT

Routine Activity in Midwest; Griffin Most Active Field

EVANSVILLE, Ind., July 15.—New work exceeded completions in the state by two new tests during the past week. Completions totaled 11 with 2 dry holes reported, 1 gas well and 8 oil wells; total initial of the oil wells was 1,039 bbl., while the gas well made 203,300 cu. ft.

Bulk of the completions was in the Griffin area of Gibson County where five wells accounted for an initial of 819 bbl., Posey County had two completions for 220 bbl. initial, Decatur County had the gas well and one well each was abandoned in Vanderburg and St. Joseph counties. In addition there was one well temporarily abandoned in Posey County.

New operations included 10 tests starting in the Sections 13, 14, 18, 24 and 25-3s-14w, Gibson County; seven of the new wells were in Section 13 where a small boom is in progress. Spencer, Posey and Daviess counties each reported one new operation.

There were 71 active drilling wells in the state and 9 rigs. Gibson County has 26 drilling wells and 7 rigs up, Posey County has 10 drilling wells and 1 rig up, and Spencer County has 9 active operations and Daviess County has 5 drilling and 1 rig up. Remainder of the work was widely scattered.

Gibson County Completion

Continental, 6 Keck ..... SW SW SW 27 3s-14w
Shot 50 qt. 2,780-2,800 ft. Pumped 52 bbl.
Lewis Prod., 1 Dunn ..... NW SW SW 18-3s-13w
Shot 30 ft. 2,080-94 ft.; pumped 195 bbl. Total depth 2,096 ft.
Hall Edwards, 2 Maier ..... NE SE SE 14-3s-14w
Pay 2,489 ft. Total depth 2,498 ft., flowed 400 bbl.
Continental, 8 Bozeman ..... SW NE NW 26-3s-14w
Total depth 2,796 ft., plugged back 2,079 ft., sand 2,044-84 ft., pumped 172 bbl.

Gibson County Drilling

Apex Drilling Co. et al, 1 Skiles SW NW NE 18-3s-14w
Old well plugging back from 2,570 ft.; cleaned out to 1,848 ft.; pumped 150 bbl.; testing.
A. L. Braden et al, 1 Simpson . NW SE NE 19-3s-11w
Old well drilling deeper; Salem 2,885 ft.; drilling 2,915 ft.
S. M. Kernan, 1 J. C. Brown ... E½ NW SE 12-3s-9w
Ste. Genevieve 1,655 ft.; total depth 1,698 ft.; show oil.
Brown et al, 1 Sullivan ..... SE NW SW 20-3s-13w
Hardinsburg 2,255 ft. with show oil; Golconda 2,207 ft.; drilling 2,470 ft.
Hollandsworth Bros., 5 Cooper . NW SE NE 24-3s-14w
Cypress 2,519-43 ft.; waiting on cement.
Hall Edwards, 4 Maier ..... NE NE SE 14-3s-14w
Drilling 850 ft.
Hall Edwards, 3-A Maier ..... SE NE SE 14-3s-14w
Cypress 2,474 ft.; rigging up standard tools 2,497 ft.
Papoose, 7 Cooper-A ..... NE SW SW 13-3s-14w
Cypress 2,475-96 ft.; waiting on cement.
J. C. Myers et al, 1 Fifer ..... SW SE SE 13-3s-14w
Shot 25 qt. 2,491-2,513 ft.; testing.
Lewis Production, 4 Cooper-A .. NE NE SE 13-3s-14w
Shot 20 qt. 2,509-15 ft.; 1,500 ft. oil in hole; testing.
Joe Bander et al, 6 Cooper .... SW NW NE 13-3s-14w
Shot 30 qt. 2,485-96 ft.
L. B. Jackson (Midwest), 1 Keeton ..... NW NE NE 15-2s-9w
Fishing 650 ft.
Walter J. Whitcomb, 1 Meade .. SE SE SW 12-1s-10w
Old well drilling deeper from 1,462 ft.; drilling 1,500 ft.
Newton P. L. Co., 1 Mary Carrithers ..... SW NW SW 25-1s-10w
Working 10-in. pipe at 790 ft.

Spencer County

L. M. Steele et al, 1 Eiglemann . NW NW NE 22-7s-6w
Barlow 1,167-73 ft.; shut down repairs 1,176 ft.
O. O. Kelly et al, 1 Kincaid ..... C NW SE 28-7s-6w
Shut down for orders at 1,010 ft.
Damron, 1 Boyd ..... SW SE SE 30-7s-6w
Installing pump at 955 ft.

Pike County Drilling

Geo. W. Miller, 1 J. R. Nixon ... SE SW NE 14-3s-8w
Trenton 4,385-4,425 ft.; show oil; shut down.

Vanderburgh County

Vanderburgh Oil, 11 Hornburg SE NW SW 33-5s-10w
McClosky 2,341; hole full of water; T.D. 2,341½ ft.

Posey County Drilling

Brown-Ryan et al, 1 Spencer .. E½ SE SE 26-7s-15w
Temporarily abandoned 2,882 ft.
Creager-Lewis et al, 1 Dietz ... NE NW SE 1-7s-12w
Sand 1,773-87 ft.; 7-in. 1,772; waiting on cement.
O. F. Kelley et al, 3 Hohn ..... SW SW NW 1-7s-12w
Waltersburg 1,805, dry; shut down 1,894 ft.
La Salle Drlg. et al, 1 Peoples Saving Bank ..... SE NW SE 26-7s-15w
Cored Glen Dean 2,556-64 ft.; recovered 22 ft. stained sand.
Superior, 27 New Harmony ..... SW NW SE 8-5s-14w
Total depth 2,978 ft.; 2,000 acid; flowed 40 bbl. in 6 hours; putting on pump.
Harry Sandler, 2 Keck ..... NE SW NW 34-3s-14w
Total depth 2,811 ft.; preparing shot.

Posey County Completions

Somers & Egan, 5 Keck ..... NW NE NE 34-3s-14w
Shot 20 qt. 2,494-2,530 ft.; pumped 70 bbl.
Ray Ryan, 3 Keck ..... SE NW NW 34-3s-14w
Shot 12 qt. 2,789-2,814 ft.; flowed 150 bbl.

MISCELLANEOUS DRILLING REPORTS

Daviess County

Newton Pipe Line Co., 1 Brittain NE NE SW 15-1n-5w
Ste. Genevieve 620 ft.; show of oil 670-75 ft.; 2 bailers water 749-55 ft.
Newton Pipe Line Co., 1 Conelly . SE SE NE 33-2n-6w
Ste. Genevieve 932 ft.; Salem 1,480 ft.; New Albany 2,039 ft.; an old well drilling deeper from 1,540 ft.

Decatur County

Hoosier Public Utilities, 212 Harpring ..... C SW NW 14-9n-9e
Trenton 907 ft., shot 60 qt. 907-15 ft.

Bartholomew County

Haw Creek, 1 Fishel ..... SE NE NE 15-10n-7e
Trenton 880 ft., drilling at 958 ft.

Marion County

White River, 1 Indianapolis Water Co. ..... NE NE SW 15-16n-3e
Show oil at 885 ft.

Boone County

N. M. Smith, 1 Marshall ..... NW NW NE 34-19-2e
St. Peter 1,537 ft., drilling 1,540 ft.

Jay County

Petroleum Dev., 1 Jacob Binegar ..... NE NE NW 29-24n-13e
Shut down 2,867 ft. with 500 ft. water in hole.

Newton County

Vaughn & Smith, 1 Darion Yacup ..... SW SE SE 33-32n-8w
Pay 816-79 ft., pumped 24 bbl. in 6 hours; shut down for orders.

OHIO

NEWARK, Ohio, July 15.—The deep tests drilling in Ohio are getting well under way. Magnolia, 1 L. M. Fields, in Mahoning County, Berlin Township, at the date of this report was drilling just under the 3,100-ft. level. Columbia Carbon, 1 J. C. Stollar, in Palmer Township, Washington County, is drilling at 3,600 ft. Nineteen completions were reported in the Ohio fields covered in this report, seven gas wells, six oil wells, and six dry holes.

Athens County, Carthage Township: C. W. Nuzum, 1 C. R. Swisher, Section 16, gas well in the Salt sand at 1,042 ft., 1,750,000 cu. ft. open flow.
Ames Township: D. T. Orndoff, 2 Leo White, frac. 33, 60,000 cu. ft. in second Berea, depth 1,405 ft.
York Township: Ohio Fuel Gas, 184 Sunday Creek Coal Co., Section 32, gas well, second Cow Run, at 213 ft., open flow 210,000 cu. ft.
Fairfield County, Walnut Township: Gas Producing, 1 O. C. Peters, Section 14, dry, Newburg, 1,970 ft.
Guernsey County, Wills Township: Bindas, 2 Guernsey County Infirmary, Section 25, 1-bbl. pumper at 430 ft.
Newark field, Licking County, Mary Ann Township: Allen Willey, 2 Homer Van Wey, Section 16, 780,000 cu. ft., Newburg sand at 2,132-52 ft.
Perry Township, Hoover Brothers, 1 Fred Lothes, Section 7, 50 bbl. of oil first 24 hours after shot, Clinton sand at 2,932-89 ft.
Lorain County, Eaton Township: Ohio Fuel Gas, 1 E. M. F. Holding Co., Lot 36, no Clinton sand, abandoned at 2,662 ft.
Medina County, Granger Township: Ohio Fuel Gas, 1 L. A. Ganyard, Lot 54, Clinton dry, depth 3,553 ft.
Meigs County, Rutland Township: B. & G. Gas, 1 Frank Utsinger, Section 8, dry, depth 805 ft.
Monroe County, Franklin Township: Wools Rocks Gas, 1 James R. McBride, Section 23, 760,000 cu. ft., 1,143-62 ft.
Center Township: Bryon Gillespie, 1 George W. Baker, Section 11, dry through Keener, depth 1,704 ft.
Washington Township: Harris, 1 John Spence, Section 18, small gas well in Keener, depth 1,511 ft.
Muskingum County, Newton Township: Atha, 1 J. T. Graham, Section 13, 1,000,000 cu. ft., Clinton sand at 3,414-55 ft.
Noble County, Jackson Township: Skinner, 2 F. C. Hughes, Section 9, 5 bbl., shot, pay at 813-18 ft.
Perry County, Clayton Township: Palm Oil, 1 Kehota Coal Co., Section 16, 35 bbl., shot, Clinton at 3,356-88 ft.
Madison Township: Gas Producing, 5 E. W. Skinner, Section 20, 50,000 cu. ft. of gas and 5 bbl. of oil, Clinton at 3,063-92 ft.
Stark County, Pike Township: Lyons, 1 Ralph Howenstine, Section 2, small show of gas, Red Clinton, abandoned at 4,789 ft.
Washington County, Liberal Township: Koon Run, 6 A. J. King, Section 22, 8 bbl., Keener, 1,359-64 ft.

EASTERN KENTUCKY

ASHLAND, Ky., July 15.—One oil well was completed in eastern Kentucky this week while other operations continued on about the same level. One dry hole was also listed.

Cumberland Petroleum, 16 Sam and John Blanton, on Horgens Creek in Magoffin County, was completed with a production of 5 bbl. of oil per day.

Rough River Corp. had a dry hole in No. 1 on the Sam Hackworth land in the Burning Fork district of Magoffin County with a slight stain of oil at a total depth of 1,119 ft.

In Wolfe County a 1,000-gal. acidization failed to help the production on the Jim Hollen well on the D. H. Rose land.

Mason County: W. S. & T. Co., at 1,600 ft., had a good show of oil in sand (reportedly St. Peter). The company was pulling casing in order to shoot hole and pulled casing in two; now fishing. The well is near Minerva.

Knott County: Inland Gas Corp. is down 1,830 ft. in Maxon in No. 213 W. R. Smith et al, on the Right Fork of Troublesome Creek. Kentucky-West Virginia Gas Co. has reached a total depth of 2,787 ft. in No. 592 John Wicker, on Jones Branch of Right Beaver, and is running tubing.

WESTERN KENTUCKY

OWENSBORO, Ky., July 15.—Four oil wells, two gas wells and four dry holes were completed in western Kentucky during the past week. Completions and important drilling reports are as follows:

Breckinridge County

Van Zant district: Morgan & Gill, 2 Ora Burton, 210-000 cu. ft. gas, Jackson sand 495-548½ ft., plugged back to 516 ft.
Pleasant Grove Church district: Charles Marsh, 2 Moxley heirs, moving in.

Daviess County

Cane Run School district: F. F. Gibson et al, 3 Mrs. L. V. Howard, drilled deeper from 1,496-1,517½ ft., McCloskey saturation 1,496-1,504 ft., to reacidize.
Utica district: Foursome Oil Co., 1 W. D. Igleheart, Bethel well being drilled deeper to McCloskey; old total depth 1,465 ft.
Borders & Schaffer, 2 William and J. E. Johnson, 12 bbl. per hour, Jett sand, 1,135-62½ ft., shot 140 qt.
C. E. Daugherty, 1 C. E. Leet, old dry hole being drilled deeper from Jett to Jones. Old total depth 1,175 ft., drilling at 1,210 ft.
Red Hill district: R. H. Compton et al, 5 F. W. Jackson, dry hole through Jackson sand, total depth 995 ft.
Maceo district: Hart & Hart, 3 William Nance, moving in.

Hancock County

Easton district: W. J. Flesher, 2 W. F. Burk, 100,000 cu. ft. gas, Bethel sand.
Maceo district: Fitzpatrick & Hayes, 1 Mrs. R. P. Ellis, dry hole through Barlow, total depth 970 ft.

Hopkins County

Two miles northwest of Richland: S. C. Yingling, 2 L. W. Schmetzer, dry hole, total depth 1,148 ft.

McLean County

Island district: Ky-Mo Oil Co., 1 Drury Smithers, moving in.

Ohio County

Taffy district: H. H. Vickers et al, 1 R. H. Baird, drilling at 440 ft.
Oaks district: Sohio Producing Corp. et al, 15 Sallie J. Bedell, 10 bbl., Jett sand, total depth 332 ft.
Buford district: A. Teller trustee, 4 Bell, drilling at 510 ft.
Rex Pyramid Oil Co., 4 Walter Blair, dry hole, total depth 832 ft.
Pleasant Grove Church district: W. A. Way et al, 6 W. H. Davidson, dry hole through Jett sand, total depth 345 ft.
E. E. Borders et al, 2 U. S. Moxley, spudding in.
Oklahoma district: O. D. Vickers et al, 5 T. Greer, 10 bbl., Jett sand, 660-671 ft., total depth 674 ft.
Pattyville School district: P. P. Murphy et al, 5 Bonnie Walker, 5 bbl., Jett sand, 288-308 ft., total depth 322 ft.

Texas Gulf Coast

By
NEIL WILLIAMS

Three-Quarter Mile Extension In West Branch Field

HOUSTON, Tex., July 15.—With wildcat operations and leasing activity at a low ebb, operators in the Gulf Coast district centered their attention on several proven fields where important extensions opened the way for additional development.

The West Ranch field, Jackson County, which has proven to be one of the district's most important reserves, was extended approximately 4,000 ft. southwest with the completion of W. Stewart Boyle, 1 Bennview Development Co., which flowed 215 bbl. per day through at 5/32-in. choke. Drilled to a total depth of 6,002 ft., 5½-in. casing was cemented at 5,535 ft., and the well was completed through perforated casing at 5,460-70 ft. An electrical survey showed the top of the Greta sand at 5,160 ft., with no show, and the sand from which it is producing was logged at 5,462-68 ft. While the producing depth of the well is a new horizon for the field, it is identified as a sand "stringer" which has been cored in some wells in the field proper, but has never been tested. In view of the fact that the well had no showing in the 5,100-ft. sand and both the 5,500 and 5,700-ft. sands carried salt water, it is believed that the well may be located on the west edge of this vast structure, and the production from this particular sand will be spotted.

The well is located in Section 35 of the J. M. Bennett Ranch subdivision in the V. Garcia Survey, on a farmout lease from Shell Oil Co., Inc. Correlated with a dry hole to the south, the well is approximately 75 ft. higher. Several major companies and independent operators control most of the acreage in this particular sector of the field, and development heretofore has been confined largely to the 5,700-ft. sand.

Thompson Field

Development of the Vicksburg pay in the Thompson field, Fort Bend County, extended to the Brazos River bed with the completion of T. S. Loffland, 1 State, for an initial production of 852 bbl. per day, flowing through a ¼-in. choke. Tubing and casing pressure was equalized at 1,500 lb. The well was drilled to a total depth of 7,914 ft., and production was obtained by perforating in the sand section at 7,938-89 ft. The rig is being moved to No. 2 State, an east offset to Naylor, 2 Shanks, while offsetting the producer to the northeast, Gulf has started drilling operation on No. 2 Scanlan.

Production from a new sand was opened in the Old Ocean field, Brazoria County, as Sun Oil Co. completed No. 4 Borsodi for an initial production of 3 bbl. of distillate per hour, flowing through a ⅛-in. choke. This well was drilled to a total depth of 11,085 ft., and after attempts to complete the well at 10,705-38 ft., and at 10,974-99 ft., failed, the hole was plugged back and production was obtained by perforating casing at 9,425-35 ft.

In the same county and located on the Bailey's Prairie prospect, the completion of Glenn McCarthy, 1 Munson, has been delayed by mechanical trouble. While tubing was being run to test sand at 11,642-52 ft., it became stuck, and the operators are trying to recover same by cutting off at intervals from 7,500 to 10,200 ft.

The new area opened 3 miles north of the Seabreeze field, Chambers County, by the completion of Sun, 1 Carrie Smith, has been named the Fig Ridge field. The well was completed the previous week through perforated casing at 8,849-53 ft., and on a 24-hour potential test, it flowed 84 bbl. of fluid, less 2 per cent salt water, flowing through a ¼-in. choke. Tubing pressure was 2,500 lb. Gravity of the oil was 38.2.

Sheridan Field

The newly opened Sheridan field, Colorado County, was receiving its second Wilcox producer as Shell, 1 Goodrich, about 1,800 ft. due west of the discovery well, recovered 470 ft. of pipe-line oil on a drill-stem test at 8,126-45 ft., the total depth, and 5½-in. casing was being cemented at 8,133 ft. Top of the Wilcox sand was logged at 8,133 ft. Structurally, the well is practically flat with the discovery well, completed in sand at 8,135-43 ft.

Titanic, 1 Fotenot, 2,100 ft. east of the South China field, Jefferson County, cored sand at 7,859-84 ft., and 7-in. casing has been cemented for completion. On the northwest side of the field, S. Miles Survey, Pan American, 1 Neal, is bottomed at 7,975 ft., with 7-in. production string cemented at 7,945 ft.

In the La Belle field, Jefferson County, and located about ½ mile southwest of gas and distillate production, Sun, 1 Foltz, E.L.R.R. Survey, is standing cemented with 7-in. casing on bottom.

Walter Goldston is preparing to spud No. 1 L. M. Josey, northwest of the discovery well of the Ogburn field, Harris County. Location is in the W.C.R. Survey.

Tomball Field

In the Tomball field Standard Oil Co. of Kansas, 1 H. Martens, a Wilcox test, located on the flank of the structure in the C. Goodrich Survey, is plugging back from a total depth of 8,955 ft., and the well will be completed in the regular 5,500-ft. sand. Details of the core record were not available.

On the Red Fish Reef prospect, offshore from Chambers County in Galveston Bay, Humble Oil & Refining Co. was preparing to retest No. 1 State, after the well flowed for 12 hours, showing 97 per cent salt water and 3 per cent oil. The well was tested through perforated casing at 8,810-25 ft., and was gaged through a ¼-in. choke, with tubing pressure building up to 625 lb. The company has staked locations for several wells on the prospect, and the rig will be moved to a new location as soon as the present well is completed.

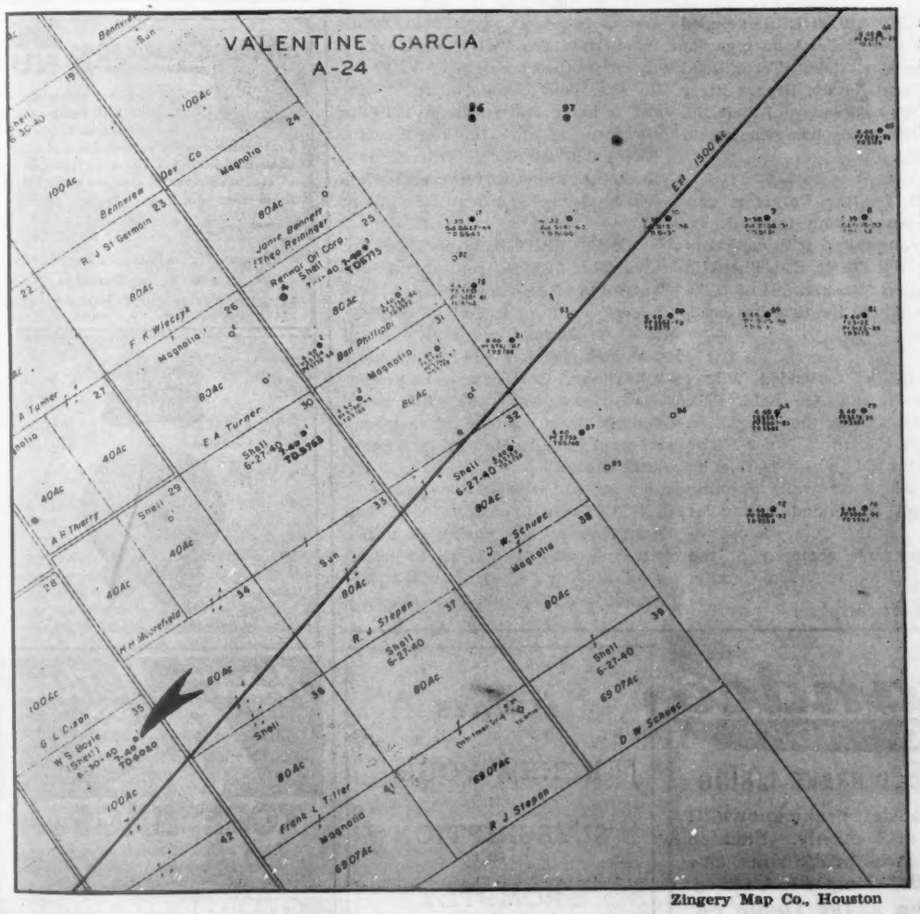
E. J. Deupree, 1-A Texas Long Leaf Lumber Co., 5½ miles southeast of Lovelady, Walker County, is being retested after the well swabbed salt water with a scum of oil through perforated casing at 2,916-26 ft. While testing the well made an unestimated small amount of sweet gas. Location is in the Mary Milsap Survey, several miles east of the Kittrell field.

Swiger & Masterson, 1 Robertson, 2 miles north of the Texana field, Jackson County, was completed for an initial production of 17 bbl. of water-white distillate per day, flowing through a 5/32-in. choke. Tubing pressure was 2,400 lb., and casing pressure 2,550 lb. This well showed promise of crude production when tested 3 weeks ago, but due to salt water encroachment, the well had to be killed, and final completion was made by perforating casing at 6,172-76 ft. In the same area, S. W. Richardson spudded No. 1 Clement, a projected 10,000-ft. test located in the Stephen F. Austin Survey.

Lolita Field

High gas-oil ratios have retarded the completion of several wells in the Lolita field, Jackson County. Hum-

(Continued on Page 92)



Zingery Map Co., Houston

A portion of the West Ranch field, Jackson County, showing W. S. Boyle, 1 Bennview, which extended production 4,000 ft. southwest

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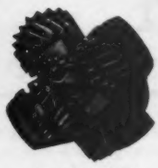

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Among the Drilling

ROWAN & HOPE received contract from Norsworthy Production Co. for a 6,500-ft. wildcat located on the T. A. McKinney lease, 3 miles northwest of Gregory in San Patricio County, Texas.

PATEL Drillers are preparing to test a wildcat in Jim Hogg County, Texas, which was drilled jointly with C. B. Peters, Inc. The well is situated about 5 miles northwest of Randado and casing is being cemented after a drill-stem test showed favorable indication in the Yegua sand bottomed at approximately 3,178 ft.

WRIGHT Drilling Co. marked up an important 4,000-ft. southwest extension to the West Ranch field, Jackson County, Texas, with the completion of W. Stewart Boyle's No. 1 Bennview. The well was drilled to a total depth of 6,002 ft. and was completed in sand at 5,400 ft.

LOFFLAND BROTHERS extended development of the Vicksburg pay at the Thompson field, Fort Bend County, Texas, to the Brazos River bed with the completion of their No. 1 State. The rig is being moved to No. 2 State.

SOONER Drilling Co. is a new Oklahoma contracting firm. It recently was organized with capital of $10,000 by Ted Foster, E. I. Shanklin and Arthur H. Dolman, all of Oklahoma City, where the firm has headquarters.

E. J. GRACEY extended Wilcox production in the Ace field, Polk County, Texas, with the completion of Shell Oil Co., Inc.'s No. 2 Kirby West Lumber Co., which is flowing oil and wash water while cleaning out through perforated casing at 7,810-20 ft. Another rotary is operating for the same company at the Clam Lake field, Jefferson County, Texas.

SPRINGROSE Drilling Co., Wichita, Kans., is starting two new tests in the fast-growing Bornholdt pool, McPherson and Rice counties, Kansas, at Central Petroleum Co. and others' No. 3-B Swanson, W½ SE NW Section 18-20-5w, and same operators' No. 4-B Swanson, E½ SE NW Section 18, both in McPherson County.

M. & M. Drilling Co., Abilene, Tex., has received the contract for a new test in the Soma field of western Crockett County, West Texas. It is J. K. Hughes' No. 1 Shannon estate, located 330 ft. north of the center of the south line of Section 28, M. T. Willon Survey, 2½ miles north of the discovery well. M. & M. Drilling Co. is also reported preparing to test its No. 1 Bouscaron estate, Section 29, Block G.G., H.E.&W.T. Survey, north of the Soma discovery well in the field. Casing has been cemented at 1,492 ft.

H. H. HOWELL is moving a rotary to Brooks County, Texas, for his No. 1 Cantu, a 7,500-ft. wildcat, located in the southwest corner of Share 5-C. In Jim Wells County, another wildcat is being started about 17 miles southwest of Alice, Block 8, Heard & Keys subdivision of the Driscoll lands in the La Anima Sola grant. The well will be drilled to a depth of 6,400 ft.

JONES BROTHERS Drilling Co., Cleveland, Okla., contracting and operating firm, completed a pool opener in Russell County, Kansas, at C. I. Carlock and others' No. 1 Mahoney, Section 8-14-12w, about 2 miles south of Bunker Hill production. The discovery well had initial daily yield of 559 bbl. of 42-gravity oil from Lansing lime at 2,943-84 ft., total depth.

REESE Drilling Co., Tulsa, was preparing to run casing to test a show of oil and gas in Cromwell sand at No. 1 Berryman, SW SW Section 36-11-8e, wildcat about 2

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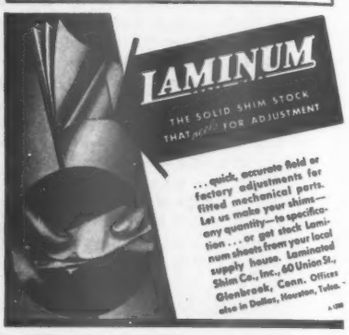
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miles east of the Cromwell pool in Okfuskee County, Oklahoma, on a Texas Co. farmout. Sand was topped at 3,468 ft. and the oil showing was found at 3,470-76 ft.

H. J. DeARMAN, drilling contractor, Houston, Tex., is drilling a 7,500-ft. wildcat in Jefferson Davis County, Mississippi, for J. W. Richardson.

MURRAY & GRIFFEY of Tulsa have contracted to drill the R. W. Williams' No. 1 Eastman-Gardner, a Mississippi wildcat located in Jones County.

CRON & GRACEY opened a new field for the Louisiana coast as Union Oil Co. of California's No. 1 White, located on the White Lake prospect, Vermilion Parish, recovered pipe-line oil on a drill stem, and the well was in the final stages of completion. The well was drilled to a total depth of 11,098 ft., and the production test is being made through perforated casing at 10,536-42 ft.

IRON Drilling Co., Tulsa, was awarded drilling contract on the Stanolind Oil & Gas Co.'s No. 1 Higgason, a deep wildcat test to be drilled on a 10,000-acre block in Madison County, Mississippi.

LOFFLAND BROTHERS are drilling the Fohs Oil Co.'s No. 1 Bond Lumber Co. in Perry County, Mississippi. The wildcat is drilling below surface casing.

HARRY L. EDWARDS Drilling Co. has two rotaries running in the Old Ocean field, Brazoria County, Texas, for Harrison & Abercrombie and Fidelity Oil & Royalty Co., while at the Anse La Butte field, St. Martin Parish, Louisiana, one rig is running for Stanolind Oil & Gas Co. In the new Iberia field, Iberia Parish, Louisiana, one rig is operating for Midstates Petroleum Co.

AL BUCHANAN Drilling Co. received contract from a 6,000-ft. test from H. R. Cullen to be drilled in the townsite of Cotulla in La Salle County, Texas. Another rig is operating in the county for H. R. Cullen, while in the newly opened Sheridan field, casing was being cemented on Shell Oil Co., Inc.'s No. 1 Goodrich, following a drill-stem test which recovered pipe-line oil.

TRINITY DRILLERS, INC., is moving a rotary to Willacy County, Texas, where contract was received for a projected deep test from Pan American Production Co. The well is located about 14 miles east of the town of Lyford in Share 13, San Juan de Carrecitas grant. Contract depth is said to be 10,000 ft.

MARSHALL & RILEY, drilling contractors of Shawnee and Oklahoma City, Okla., have been given the drilling contract for a deep wildcat test in Montague County, North Texas. It is Larry Hults and Tom B. Owens, both of Fort Worth, No. 1 J. E. Tucker, located 467 ft. from the north and west lines of Block 2,836, T.E.&L. Survey, 6½ miles southwest of Stoneburg. The test was spudded and surface casing set at 300 ft. several weeks ago. Contracted to 7,500 ft., it will be drilled with a large diesel-powered rotary.

CLEVE LOVE, operator and drilling contractor of Jackson, Miss., is drilling an outpost wildcat near the Pickens field, Yazoo County, Mississippi, for Leon Dunn.

TAUBERT, McKEE & SIEMONEIT Drilling Co., Fort Worth, Tex., (formerly Taubert & McKee Drilling Co.) has staked location for a deep 6,500-ft. Ordovician wildcat test in Pecos County, West Texas. It will be the firm's No. 1 Virginia W. Crockett, SW cor. of the Crockett tract in Section 4½, Block 3, H.&T.C. Survey. The location falls about 2 miles east of the town of Imperial and 3½ miles south of the Pecos River. It is only 1¼ miles south of the old Magnolia Petroleum Co. and Tex-Mex Oil Co.'s No. 1-A McKee, a failure in 1938 at 6,267 ft.

NOBLE Drilling Co., Inc., Tulsa, has completed the third producer out of four starts for the Continental Oil Co. in the recently discovered Todd deep field in Crockett County, West Texas. The new well is No. 4 Todd, Section 29, Block WX, G.C.&S.F. Survey, a quarter mile south of the discovery well. The drilling company drilled No. 1 Todd for Continental early last year and abandoned it as dry at a total depth of 7,010 ft. The No. 2 Todd opened the deep field to production from the Crinoidal lime of Pennsylvanian age. The latest completion, although 97 ft. lower, structurally, made the largest initial potential of any of the three wells thus far in the field. Officially it gaged 3,480 bbl. daily, based on a 4-hour flow of 580 bbl. Noble Drilling Co., Inc., will drill Continental's No. 5 Todd; however, operations have not yet begun.

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Appalachian Fields

By
STAFF CORRESPONDENT

Quiet Week in Pennsylvania; Operators Watch Deep Test

PITTSBURGH, Pa., July 10.—The wildcat being drilled by the New Penn Development Co., William E. Snee, and others on the Kate Schartzer (Humberson) farm on the Accident dome in Garrett County, Maryland, is now drilling at 6,813 ft. and has struck a hard limy member which may possibly be the Tully lime. As there was nothing with which to correlate this test, it was at first believed that the Lower Devonian would be reached much higher but it is now thought the Onondaga is still several hundred feet deeper.

During the past week in the lower eastern fields, there were 28 completions, of which 4 were dry, 18 gas wells and 6 oil producers with a daily initial of 68 bbl.

Southeast Ohio was fairly inactive during the week with only three completions, one of which will make a fair producer. In the SE Section 15, Perry Township, Coshocton County, Preston Oil Co. completed No. 6 Ray and Ella M. Vanwinkle in the Clinton sand at 3,131 ft. It filled up 250 ft. in the first 24 hours, which indicates a 50-bbl. pumper.

In Monroe County, Otto Spangler and others completed No. 24 Henry C. Swartz in S½ Section 10, Bethel Township, in the first Cow Run at 588 ft. It is good for a 2-bbl. pumper.

In Noble County, S. T. Skinner and others completed a test on the F. C. Hughes farm, N½ Section 9, Jackson Township, in the Berea at 1,650 ft. It was dry in the Berea but the oil show in the 700-Foot sand is being tested.

SOUTHWEST PENNSYLVANIA

During the week five gas wells and one dry hole were reported from Southwest Pennsylvania. In Kittanning Township, Armstrong County, Edward Young and others drilled No. 1 Hugh Blair to 3,613 ft. with only 11,000 cu. ft. a day showing from the Bradford sand. Here H. C. Judson and others are drilling No. 1 Robert Watterson at 1,515 ft. and Equitable Gas, 1 James Waltenbaugh, at 2,421 ft.

In Kiskiminitas Township, Armstrong County, Peoples Natural Gas Co. deepened No. 1 R. M. Burns to 1,736 ft. and it is good for 231,000 cu. ft. a day from the Murraysville. In Plum Creek Township, this company is drilling No. 1 John Shetler at 2,678 ft. and William McCollins, 2 Add Reefer, is shut down at 980 ft.

In Cowanshannock Township, Armstrong County, Equitable Gas Co. is drilling No. 3 G. W. Smeltzer at 2,870 ft. and, in Burrell Township, is rigging up No. 2 James Deshong. In Mahoning Township, Penn Wayne Gas Co. is drilling No. 1 Elizabeth Foster at 1,800 ft. and John Wray & Co., 1 King Shaffer, is shut down fishing. In Wayne Township, Galbreath & Co. are drilling No. 2 John Dormire at 2,240 ft. A local company has a location for No. 2 W. L. Piert.

Washington-Greene-Fayette

In Blaine Township, Washington County, Washington Oil Co. completed No. 1 Vera K. Stine at 2,625 ft., Gordon Stray sand, with 150,000 cu. ft. of gas a day at 2,585 ft.

In Amwell Township, Washington County, Chivers and others spudded in and started drilling a test on the Ed Earliwine farm. Here Carnegie Natural Gas Co. is hauling in material for No. 2 W. C. McCollum. Equitable Gas Co. is drilling No. 1 R. Foster at 2,970 ft. with Gantz and Fifty-foot sands at 2,647-2,752 ft., and 26,000 cu. ft. of gas a day at 2,670-72 ft.

In Somerset Township, Washington County, this company is drilling No. 1 W. W. Wright at 2,385 ft. with Fifty-foot sand at 2,314-80 ft. and 90,000 cu. ft. a day at 2,315 ft. No. 1 Watkins is drilling at 1,670 ft. In North Franklin Township, Ed Tague is drilling No. 14 Adeline D. McKennan at 600 ft. In Amwell Township, Orrill and others have a location for a test on the Membs Lantz farm.

In Richhill Township, Greene County, O. I. Dille and others completed No. 2 Madison Hughes at 2,165 ft., with the Gas sand at 1,978-2,022 ft. and 160,000 cu. ft. of gas a day at 2,008 ft. In Morris Township, Hiawatha Oil Co. drilled the test on the Thomas Young heirs to 3,507 ft. and it was dry in all sands.

In Fayette County, Wahler Powers Oil & Gas Co. is drilling No. 1 W. L. Rockwell at 1,180 ft. and No. 2 Shamrock Farms Co. at 2,365 ft. Both are in Menallen Township. In German Township, J. H. Carnell is drilling No. 1 Marion Kurkankuski at 1,940 ft.

Clarion-Indiana-Westmoreland

In Monroe Township, Clarion County, T. W. Phillips Gas & Oil Co. completed No. 2 Charles Byers at 2,450 ft. with 50,000 cu. ft. a day from the Hundred-foot, Fifth, and Speechley sands. Here Owens-Illinois Glass Co. shut down No. 1 P. M. Smathers at 1,268 ft. In Porter Township, Cottage Hill Gas Co. is drilling No. 1 E. M. Reitz at 2,900 ft. and T. A. Swartzfager, 4 C. A. Swartzfager, at 2,570 ft. In Red Bank Township, T. W. Phillips Gas & Oil Co. is drilling at 1,125 ft. on the David McKinley farm.

In Westmoreland County, Kiski Valley Gas Co. is drilling No. 1 J. F. Wolford at 1,960 ft. in Bell Township. In lower Burrell Township, Peoples Natural Gas Co. is drilling No. 1 John Hulton at 3,140 ft. and in Washington Township, No. 2 A. J. Idings at 3,245 ft.

Deep Tests

On Chestnut Ridge in South Union Township, Fayette County, New Penn Development Co., William E. Snee, and others are deepening No. 2 Summit Hotel (Heyn) and have reached 6,830 ft. with no additional gas. The Oriskany should be reached within the week if no additional pays are found. In this township the Peoples Natural Gas Co. is drilling No. 2 Piedmont Coal Co. at 5,607 ft.

On Laurel Ridge in Stewart Township, Fayette County, New Penn Development Co., W. E. Snee, and E. G. Mueller have reached 7,613 ft. in the test on the Gregg L. Neel farm. At 7,568-86 ft. there was a hard limy formation at first believed the Onondaga which was disproved by ensuing shale.

WEST VIRGINIA

New oil production continues scarce with only two small wells during the week. In Kanawha County, Silman Oil & Gas Co. completed No. 29 W. W. Rader in Big Sandy district at 2,041 ft. with the Weir sand at 1,966-2,030 ft. and good for 4 bbl. a day.

In Roane County, American Oil & Development Co. completed No. 2 Ord Conley in Harper district at 1,823 ft., with Salt sand topped at 1,726 ft.; gas gaging 55,000 cu. ft. a day before shot at 1,734-36 ft., and 5 bbl. oil a day at 1,751-55 ft.

In Clay County, Virginian Gasoline & Oil Corp. completed No. V1286 Brown, Swann & Goshorn, in Henry district, at 1,823 ft., the Injun sand, and it is good for 6 bbl. a day.

Gas Wells

In Cabell County, Dennis M. Roy completed a test on the Ida M. Adkins farm in McComas district, with the Big lime 1,475-1,628 ft.; Big Injun, 1,628-78 ft.; Berea, 2,276-87 ft.; Brown shale, 2,675-3,385 ft., and a final gage of 148,000 cu. ft. a day 72 hours after shot from a total depth of 3,390 ft.

In Clay County, Thompson Gas Co. completed No. T48 Thompson Coal & Land Co. in Pleasant district at 1,467 ft., Salt sand, with a gage of 841,000 cu. ft. of gas a day.

In Gilmer County, Howard Jarvis and others completed a test on the Gainer and Crites lease in Glenville district at a depth of 1,255 ft. with the Maxton sand topped at 1,225 ft. and 148,000 cu. ft. a day before shot at 1,242-48 ft.

In Hancock County, John J. McIntosh drilled a test on the Sarah States farm in Butler district through the Berea sand to 1,085 ft. It was dry.

In Mingo County, United Fuel Gas Co. completed No. 4872 Central Trust Co. in Warfield district at 3,355 ft. with the Big lime at 1,673-1,867 ft.; Big Injun, 1,867-1,910 ft.; Berea, 2,403-2,500 ft.; Brown shale, 2,500-3,341 ft., and a final gage of 41,000 cu. ft. a day.

In Washington district, Lincoln County, Harvard Gas Co. completed deepening No. 2 Lincoln Land & Minerals Co. at 4,570 ft. with the Brown shale at 3,610-30 ft., 3,834-64 ft., 3,692-4,020 ft., and 4,445-4,570 ft. It gages 79,700 cu. ft. a day.

In Sheridan district, Lincoln County, Sweetland Land & Mining Co. completed No. 1 fee at 3,253 ft. with the Big lime at 1,299-1,485 ft.; Big Injun, 1,507-25 ft.; Berea, 2,065-74 ft.; Brown shale, 2,721-3,243 ft., and a final gage of 148,000 cu. ft. a day 24 hours after shot.

In Kermit district, Mingo County, W. E. Burchett and others completed a test on the G. D. and Harvey Pearce farm at 2,934 ft. with the Big lime at 1,545-1,630 ft.; Big Injun, 1,630-50 ft.; Berea, 2,112-2,220 ft., and Brown shale 2,220-2,910 ft. It gages 160,000 cu. ft. a day after shot.

In Ritchie County, Togers Farm Oil Co. drilled a second test on the S. P. Rogers farm in Clay district through the Injun sand to 1,997 ft. and it was dry.

In Upshur County, Pittsburgh & West Virginia Gas Co. completed No. 7754 Ruth Marple in Buchanan district at 4,551 ft. with the Benson sand at 4,512-22 ft.; gas gaging 150,000 cu. ft. a day at 4,514-21 ft.

In Wayne County, Hamilton Gas Co. completed No. 1 Chaffin Brothers in Ceredo district at 3,299 ft., with the Big lime at 1,430-1,602 ft.; Big Injun, 1,602-1,825 ft. Berea, 2,247-57 ft.; Brown shale, 2,580-3,299 ft., and a final gage of 68,000 cu. ft. a day 48 hours after shot. In Lincoln district, Owens-Libby-Owens Gas Department completed No. 25 A. W. Wilson at 2.793 ft. with a gage of 600,000 cu. ft. a day from the Brown shale. In Stonewall district, Southern West Virginia Oil & Gas Corp. completed deepening No. 8 B. J. Pritchard at 2,982 ft., starting at 1,325 ft. The Big lime was bottomed at 1,395 ft.; Big Injun, 1,935-1,480 ft.; Berea, 1,990-2,015 ft.; Brown shale, 2,640-2,982 ft. It gaged 425,000 cu. ft. a day from the Big Injun without shot and 200,000 cu. ft. a day from the Brown shale 36 hours after shot.

In Wood County, Tri County Producing Co. drilled No. 39 Dora McAtee and others in Williams district through the Cow Run sand to 835 ft. and it was dry.

Oriskany Gas Field

In Poca district, Kanawha County, Godfrey L. Cabot, Inc., completed Ida P. Gibson and others with the Oriskany sand topped at 4,851 ft. and a gage at 4,886 ft. of 3,487,000 cu. ft. a day before shot. The final gage of this operator's No. 3 D. Holmes Morton, in Poca district, was 4,720,000 cu. ft. a day after shot and a total depth of 5,072 ft.

In Poca district, Columbian Carbon Co. completed No. 1 Joseph Hughart with a final gage of 2,834,000 cu. ft. a day from 5,089 ft. after shot. The United Fuel Gas Co. completed No. 4878 J. P. Bailey at 4,898 ft., with a final gage of 1,220,000 cu. ft. a day.

In Union district, Kanawha County, Godfrey L. Cabot, Inc., shut down with the gas in the line in the No. 2 L. M. Lafollette, which reached 1,638 ft. and a gas volume of 1,344,000 cu. ft. a day.

Southwest Texas

By
F. L. SINGLETON

New Sands, Offshore Field Found in Southwest Texas

CORPUS CHRISTI, Tex., July 15.—Opening commercial production on the Riveria Beach prospect, offshore from Kleberg County in Laguna Madre Bay, new sand discoveries in several proven fields, and a scheduled production test of a wildcat in Jim Hogg County, held the attention of operators in the Southwest Texas district the past week.

Skelly, 1 State, offshore from Kleberg County in Laguna Madre Bay, which has been in the process of completion for several weeks, was officially completed for an initial production of 112 bbl. of 38.8-gravity oil per day, flowing through a ¼-in. choke. Tubing pressure was 1,300 lb. and casing pressure 800 lb. The well was drilled to a total depth of 9,424 ft., and final completion was made by perforating casing at 7,459-62 ft. The flow was free of salt water.

In the Robstown field, Nueces County, Richardson, 1 Boy Scouts of America, located in the Robstown townsite, is bottomed at 6,869 ft., and 5½-in. casing was cemented at 6,692 ft., preparatory to testing a new sand logged at 6,550 ft. An electrical survey and sidewall cores showed possible production at intervals from 6,540-68 ft. Sand showing gas and distillate was logged at 5,500 ft., which is apparently the same sand from which the discovery well, 1 mile to the northwest, was completed in. With only two wells drilled on the structure, it is apparent that sand conditions will be very irregular, and for the time being no large-scale drilling campaign is anticipated. Production was extended to the townsite area in May with the completion of Richardson, 1 Studer, completed as the first crude producer in a new sand at 5,195-5,207½ ft. The Robstown city council has granted 39 drilling permits within the townsite, but future development depends on the outcome of the present well. Approximately 1½ miles east of the field, Texas Conservative, 1 Isensee, is shut down at 6,510 ft., with no shows of oil or gas reported.

Nueces County

Locations for two interesting wildcats were announced for Nueces County. Approximately 1½ miles southwest of the newly opened East Flour Bluff field, Humble Oil & Refining Co. staked location for No. 1 W. R. Duncan in Block 20, Section 54, F.P.&E.F.& G.T. Survey. Approximately 3 miles southwest of the Flour Bluff field, H. D. & H. Oil Co. made location for No. 1-D State in Cayo del Oso Survey. The well is being drilled on a farmout lease from Humble Oil & Refining Co.

Humble, 1 State, the discovery well of a gas field in Nueces Bay 2½ miles southwest of Corpus Christi, flowed 165,000 cu. ft. of gas per day through a ¾-in. choke. Drilling was started on the company's No. 1-B State in Tract 746, while Stanolind, 1 State, Tract 746, is drilling in shale below 3,400 ft.

Sinclair Prairie, 1-694 State, a deep test drilled in Nueces Bay, offshore from the East White Point field, was plugged back from a total depth of 7,632 ft., where drill pipe became stuck, and the well was completed for a dry gas well through perforated casing at 3,960-75 ft. This is the deepest drilled in the field and the 5,600 ft. sand was apparently missed.

Continental, 2 St. Charles, the second well drilled on the St. Charles structure, Aransas County, was recompleted through perforated casing at 7,604-18 ft., and the well is flowing at the rate of 1 bbl. of distillate per hour through a ⅛-in. choke. Tubing pressure was 2,350 lb., and casing pressure 2,500 lb. The well was recompleted after a test the previous week at 7,636-45 ft., tested gas and distillate. Whether or not the well will be killed and retested has not been determined.

In the northwest extension area of the Fagan field, Refugio County, Norsworthy, 2 Fagan, is bottomed at 5,953 ft., and casing is being cemented for a production test. The well is located in the N. Fagan Survey, 2,800 ft. southeast of the company's 1 Fagan, recently completed to open production from a new sand at 5,600 ft.

McFaddin Field

Production from a new sand was opened in the McFaddin field, Victoria County, as Transwestern, 14-E Fagan, flowed pipe-line oil on an 18-minute drill-stem test through perforated casing at 5,292½-95½ ft., and working pressure built up to 50 lb. Drilled to a total depth of 6,452 ft., 5½-in. casing was cemented at 5,325 ft., following an electrical survey which indicated a sand section at 5,288-5,308 ft.

Colton & Colton, 1 Beck, which opened the Terrell field, Victoria County, and was deepened due to a decline in production, is shut down for orders after the well tested salt water through perforated liner at 5,289-92 ft.

In Calhoun County, 6 miles southeast of Seadrift, Coronado Corp. continues to test No. 1 J. J. Welder, and the hole is being cleaned out after the well sanded up after flowing an unestimated amount of oil. Final completion will be made through perforated casing at 5,654-55 ft., and at 5,658-59 ft. Location was made for No. 2 Welder, 1,100 ft. southwest in the Eusebio Hidalgo Survey.

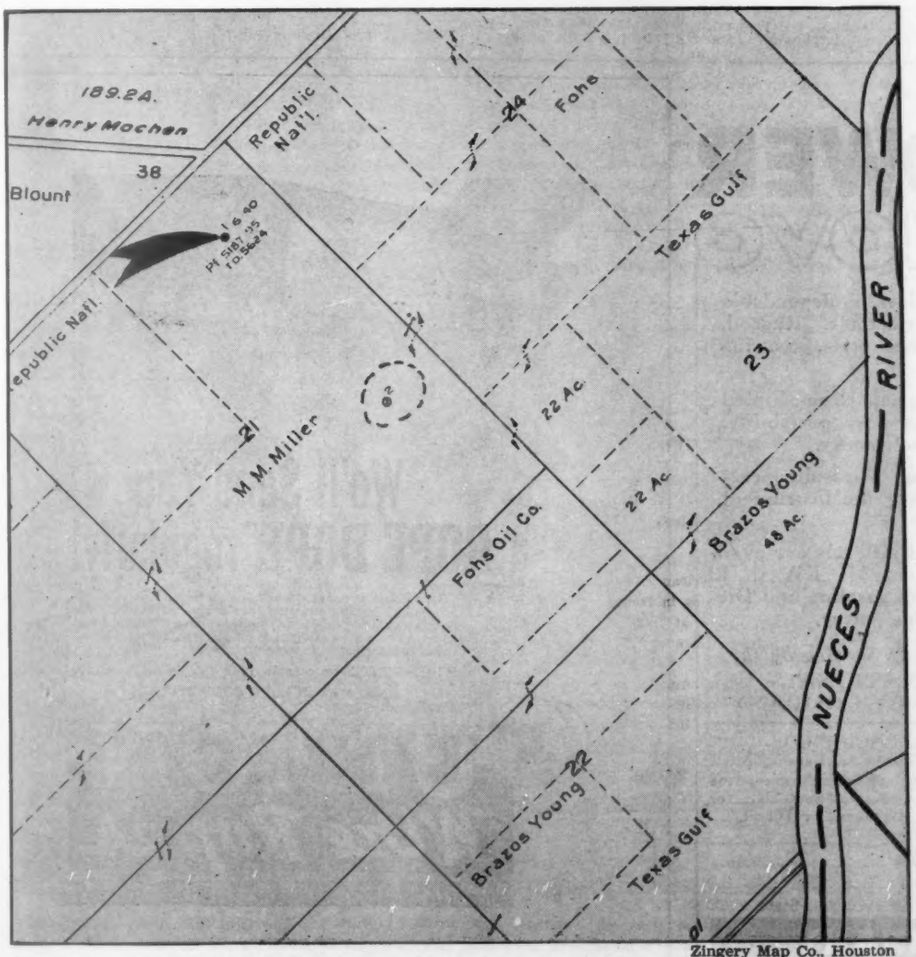
Three miles north of the Muralla field, Duval County Forest Development and others, 1 Rodgers, is flowing gas with a spray of distillate while testing through perforated casing at 4,303-06 ft. The well may be killed and recompleted inasmuch as drill-stem testing through perforated casing the previous week recovered 1,300 ft. of pipe-line oil. The Cockfield was topped at 4,228 ft. and the Pettus sand at 4,291 ft. Along this same trend, and 1 mile north of the Muralla field, J. B. Blanchard and others are moving in material for a Pettus sand test, located on the Perez lease in Section 548. Location for another interesting wildcat was staked by Prescott Williams for 1 Taylor, 3 miles east of the O'Hern field, Block 84, El Mesquite grant.

Gallagher Field

A new sand discovery for the newly opened Gallagher field, Jim Wells County, was indicated as M. M. Miller, 2 Gallagher, several hundred feet south of the discovery well, tested 600 lb. working pressure, and recovered 160 ft. of oil on a 20-minute drill-stem test at 5,744-62 ft. Salt water sand was cored at 5,769-5,807 ft., and the well is coring ahead below 5,900 ft. A 29-minute drill-stem test in the regular pay, at 5,216-43 ft., recovered 75 ft. of oil and 100 ft. of oily mud.

Location for a 6,400-ft. wildcat was made in the county by H. H. Howell, who is rigging up for No. 2 Clara Driscoll, approximately 17 miles southwest of Alice in Block 8, Heard & Keys subdivision of the Driscoll Lands in La Anima Sola grant.

On the east flank of the Stratton field, Nueces Coun-



Zingery Map Co., Houston

Plat of the Gallagher field, Jim Wells County, showing location of discovery well, and the second well (indicated by circle), which has shown indication of opening a new sand

ty, two wells were coring for the 6,300-ft. pay from which oil production was recently opened on this gas and distillate structure. Offsetting the discovery well to the north, Conroe Drilling, 1 Sellers, was coring below 6,000 ft., while Southern Minerals, 2 Bertram, was coring below 6,360 ft.

Five miles northwest of the Randado field, Jim Hogg County, Patel Drillers and others were setting casing preparatory to testing No. 1 Gutierrez. The well is bottomed at 3,156 ft., and a production test will be made of a sand section at 3,120-29 ft. A 10-minute drill-stem test at 3,118-56 ft., recovered 3 ft. of oily drilling mud, and working pressure built up to 850 lb. Should testing in this sand fail, another test will be made at 2,839-49 ft., where drill-stem test, recovered 3 ft. of oily mud and working pressure built up to 350 lb. The well topped the Mirando sand at 2,423 ft., Colorado sand at 2,839-45 ft., and the Yegua sand at 2,958 ft. Location is in the E. C. Barton Survey 579.

Boyle Field

Rutherford, 1 Carruth, the second well to be drilled in the Boyle field, Starr County, and 700 ft. northeast of the discovery well, is drilling below 4,000 ft. after a 15-minute drill-stem test in the discovery sand at 3,515-25 ft., recovered 1,100 ft. of salt water. Tight sand with an oil and gas odor was cored at 3,323-29 ft., and a 10-minute drill-stem test, tested 170 lb. working pressure.

Tide Water, 8 Bruni, a Wilcox test in the Bruni field, Webb County, is drilling in shale below 6,530 ft., following a 20-minute drill-stem test in the Queen City formation at 5,630-45 ft., which tested 60 ft. of salt water and no working pressure.

In the same county and located in the Glen field, Transwestern, 5 Bruni, is bottomed at 2,127½ ft., with 5½-in. casing cemented at 2,155 ft., while Holland & Simmons, 1 Bruni, is running casing to test at a total depth of 2,172 ft. Sandy shale and sand showing oil was cored at intervals from 2,164-72 ft.

Rio Grande Valley

Drilling activity in the Rio Grande Valley area was showing an increase, and drilling was under way on several projected deep tests and additional wells were scheduled to be started.

In Brooks County, Sun, 1 Boedeker, 12½ miles south of Falfurrias, is drilling in shale, while 2½ miles south of Gyp Hill, West, 1 J. D. Cage, is drilling in shale below 6,150 ft. Location for a 7,500-ft. wildcat was made by H. H. Howell for 1 Cantu, in the southwest corner of Share 11 and Share 5-C in the La Alameda grant.

In Willacy County, contract was let by Pan American Production Co. for No. 1 Portfirio Garcia, located about 14 miles east of the town of Lyford in Share 13, San Juan de Carrecitas grant.

In Jim Hogg County, and 7 miles east of Hebronville, Humble Oil & Refining Co. cemented casing in No. 4 Mestena Oil & Gas Co., a projected deep test located in Section 392, San Antonio de Baluarte grant.

H. R. Cullen, 1 Washburn, a Wilcox test in La Salle County, is bottom at 7,610 ft., with the drill stem stuck, while in the Cotulla townsite, contract was let by the same operator for No. 1 Wildenthal, a projected 6,000-ft. test.

Northeast of the Rincon field, Complete Oil Well Service is moving in material for a 5,000-ft. wildcat in Survey 227, located on a farmout from the Sun Oil Co.

SOUTHWEST TEXAS COMPLETIONS IN PROVEN FIELDS

Duval County

Hoffman field: Magnolia, 14 Well, sand 2,656-72 ft., 93 bbl., ⅝-in. choke.
Tarancahuas field: Cox and others, 1 Hoffman, 2,079 ft., 135 bbl., ⅝-in. choke.
Cox and others, 3 Hoffman, 2,094 ft., 210 bbl., pumping.
Cox and others, 5 Hoffman, sand 2,019-33 ft., 125 bbl., pumping.
Cox and others, 6 Hoffman, sand 2,015-28 ft., 135 bbl., pumping.

Guadalupe County

Darst Creek field: Diamond Half, 1 Dix, 2,502 ft., 17½ bbl. oil, 213 bbl. water, pumping.

Hidalgo County

Samfordyce field: Porter, 1 Flores, perf. casing 4,106-10 ft., 85 bbl., ½-in. choke.

Jim Hogg County

Colorado field: Humble, 15 Atwood, 3,096 ft., 331 bbl., ¼-in. choke.
Neuhaus, 1-E Trevino, 2,998 ft., 200 bbl., ⅛-in. choke.
Sun, 2 Thaxton, 2,980 ft., 169 bbl., ⅛-in. choke.

Jim Wells County

Wade City field: DeLange, 11 McNeil, perf. casing 4,934-38 ft., 268 bbl., ⅛-in. choke.
Henshaw, 2 Wendt, perf. casing 4,915-21 ft., 175 bbl., 9/64-in. choke.

Live Oak County

Oakville field: Moore Development, 2 McGriff, perf. casing 1,830-37½ ft., 87 bbl., jetting.

Medina County

Chacon Lake field: Murrell, 14 fee, sand 413-20 ft., 2½ bbl., pumping.

Nueces County

Agua Dulce field: Lockhart, 1 Anderson, perf. casing 6,530-45 ft., 20 bbl., ¼-in. choke.
South Clara Driscoll field: Texas, 2 Flynn, 5,266 ft., 66 bbl., ⅛-in. choke.
Minnie Bock field: Windsor, 4 Howze, 3,858 ft., 43 bbl., 3/32-in. choke.

Refugio County

Fagan field: Norsworthy, 1 Fagan, perf. casing 5,655-58½ ft., 75 bbl. oil, plus 55 per cent salt water, ⅛-in. choke.

San Patricio County

East White Point field: Republic, 38 Rachal, perf. casing 5,760-70 ft., 22 bbl. distillate 17½ hours, ⅜-in. choke.

Starr County

Margo field: Kelley, 1-A Gonzales, 508 ft., dry.
Rincon field: Davis, 3-A Davenport, perf. casing 4,052-88 ft., 268 bbl., ⅛-in. choke.

Victoria County

Heyser field: Gulf, 7 Schultz, 5,760 ft., gas well.

Webb County

Volpe field: Holland, 1 Lopez, 2,453 ft., 60 bbl. oil, 39 bbl. salt water, pumping.
West Cole field: Magnolia, 10 Benavides, 2,348 ft., 35 bbl., pumping.

ABANDONMENTS

Calhoun County

Ray Ranger, 1 Sells, 9,011 ft.

Duval County

Henderson Coquat, 1-B Southland Life Insurance Co., 5,640 ft.

Guadalupe County

Lavernia, 1 Boeck, 1,508 ft.

Starr County

Sun, 1 King, 5,088 ft.

Victoria County

Pacific-Irwin, 1 Keeran, 7,506 ft.

Webb County

Hagen, 1 Masterson, 2,367 ft.

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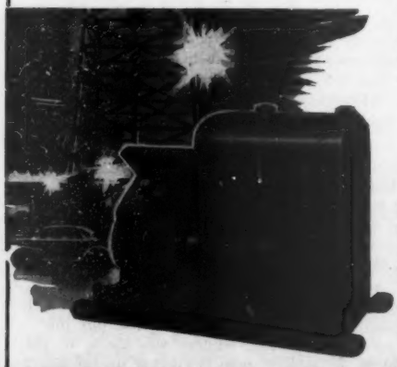

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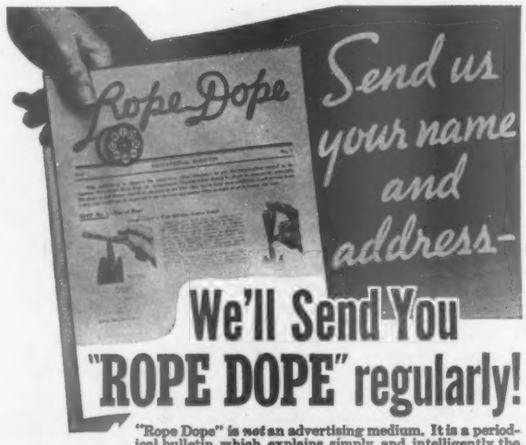

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North Central, East Texas

By

R. MARNE SANFORD

Drilling Campaign Resulting In Many Likely Prospects

WICHITA FALLS, Tex., July 15.—In line with the increasingly active deep exploratory drilling program through northern Texas, there were four new deep discoveries reported for the past week. One of last week's discoveries, in Montague County, was reported taking official gage as the week closed and Wilbarger County's discovery of last week remained shut in to total six new oil fields from the deep levels in the past 14 days.

All of the new discoveries of this week have strongly indicated commercial production, some reporting good flows of oil. However, all were still in the testing stages at the close of the week. Bearing out the contention of several geologists that either one large field or several smaller ones would ultimately be discovered on the estimated 52,000-acre structure on the Clay and Montague county line, a new 5,900-ft. pool opener was in prospect as the week closed. It is located about 3 miles west and slightly north of the Worsham production in eastern Clay County and about 6 miles west and slightly south of the recently opened Seay field in extreme western Montague County. The discovery is E. C. Norwood and others' No. 1 Hapgood, located in the western part of Block 61, Marion County School Lands. Early in the week the prospective discovery drilled saturation in the Caddo lime from 5,970 to 5,984 ft. A 10-minute drill-stem test netted a spray of oil together with an estimated 6,000,000 cu. ft. of gas. Seven-inch casing was cemented at 5,972 ft. and as the week closed operators were preparing to drill plug.

Indicated Montague Discovery

Indicating the southernmost field yet opened in the Fort Worth basin area of North Texas, Walter Gant, 1 Will Laird, in the southwestern part of Montague County, drilled several zones of saturated sand which were estimated sufficient by operators to make commercial production. The wildcat is located in the R. T. Millard Survey, 5 miles west of Fruitland and about a mile north of the Wise County line. The test drilled a zone showing both oil and gas from 4,857-61 ft. and then cored from 4,861 ft. to 4,871 ft. and recovered full 10 ft. of saturated sand. Another core from that depth to 4,878 ft. recovered medium-grained sand showing oil and further coring returned more saturated sand. The present total depth is 4,880 ft., where the test is shut down for sample analysis. A drill-stem test from 4,857 to 4,871 ft. showed 10 ft. of oil and 150 ft. of mud in 40 minutes with no water present. Whether the test would be drilled deeper or whether casing would be cemented for completion attempts at the present depth was not known at the close of the week.

Discovery Gaged

Last week's discovery well just east of the town of Nocona and about 2 miles east of the three-pay-level Rogers & Rogers field of northern Montague County, has been gaged. It is Sinclair Prairie, 1 Benton, Thomas R. Jackson Survey. With pay drilled from 5,120 to 5,135 ft., a different zone than any of the three levels in the Rogers & Rogers field, the well made 59 bbl. of oil in 3 hours at the close of the week. This is the first official gage yet reported from the well. However, a full 24-hour gage is expected before final completion. The well had previously been shot with 5 qt. and acidized with 3,000 gal. after which 200 bbl. of oil was swabbed daily. The well is producing from the typical conglomerate pay of other recent Montague County discoveries.

Foard County Strike

In northeastern Foard County just northwest of the Thalia field and slightly north of the axis of the Red River uplift a new field has been indicated to give the county its third oil-producing area. The discovery is Thomason Oil & Royalties, 1 E. M. Gamble, Section 314, H.&T.C. Survey, 8 miles northeast of Crowell. With pay topped in the upper Canyon series at 2,345 ft., the test is bottomed at 2,369 ft. When the plug was drilled early in the week the tools were blown from the hole and oil immediately started flowing. Several flows of oil were reported into the pits before it was shut in for the erection of storage. The discovery will be opened early this week for further testing.

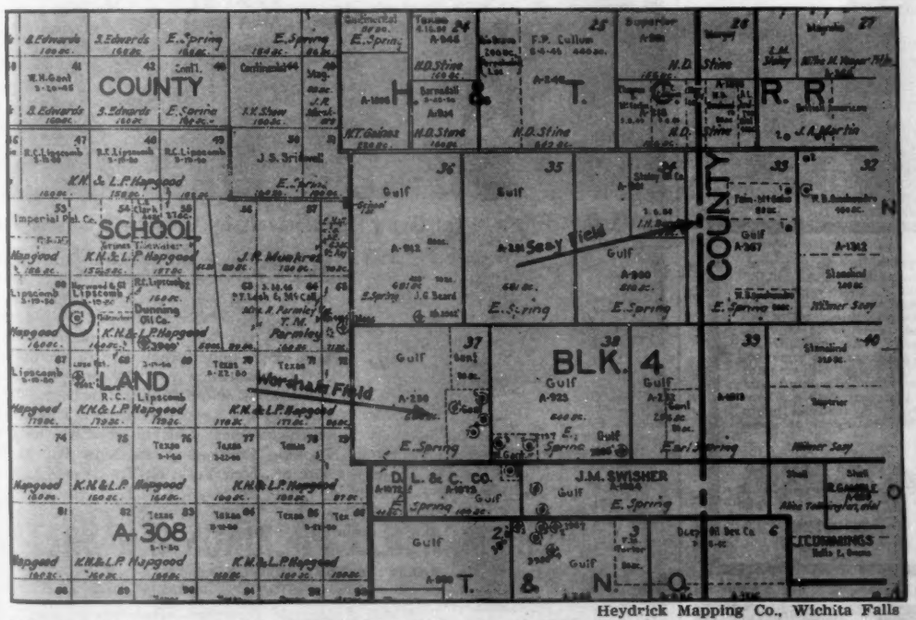
Jack County Discovery

Not relative to the Fort Worth basin structural conditions but rather to the Bend arch at its northern extremities is a new discovery reported during the week in Jack County. It is Gillespie, Harper & Knappenberger, 1 Crum, J. C. McClenden Survey, about 1½ miles northwest of the East Bryson field and a similar distance southeast of a long-producer drilled several years ago on the Loving lease by G. M. Gillespie. Indicating the linking of the Loving lease producer with the East Bryson field itself, the new discovery topped saturation in the Bryson sand at 3,131 ft. and drilled 12 ft. to 3,144 ft., still in saturation. The test was shut down for the erection of storage at the close of the week, initial gages expected to be reported early this week.

Deep Tests in Archer

One of the few dry holes for the yet-undefined Hull-Silk field is being drilled deeper as an Ordovician test. It is Chapman & McFarlin, 7-E L. F. Wilson, E. Hall Survey, Abstract 662, on the west side of the Hull-Silk field. Both the 3,800 and the 4,300-ft. pays were missed and an electrical survey at a total depth of 4,993 ft. had revealed nothing. The Ellenburger lime had been topped in deepening at 4,895 ft. As the week closed the operators were drilling another 100 ft., where another electrical survey will be made.

In the center of the old shallow Swastika field in southwestern Archer County, one of the first oil-producing areas in the county, a deep 5,000-ft. wildcat is preparing to commence. It is C. W. Clark, 1 N. D. Goldsmith, Block 6, South Anderson Ranch subdivision, 10 miles northwest of Olney.



Heydrick Mapping Co., Wichita Falls

Indicating the latest discovery in the Fort Worth basin area of North Texas is E. C. Norwood, 1 Hapgood, about 3 miles west and slightly north of the Worsham production and about 6 miles west and slightly south of the recently opened Seay field. The discovery is located in the extreme eastern part of Clay County and is believed on the estimated 52,000-acre structure embracing both the Seay and the Worsham fields

NORTH TEXAS AREA COMPLETIONS

(24-hour gages)

Archer County

Wildcat: Bridwell Oil, 2 Dunnam, 8 bbl., 1,385-99 ft.
Olney field: Burns, 3 First National Bank of Olney, 10 bbl., 1,450-61 ft.
Petroleum Producers, 7 Richardson, 20 bbl., 1,259-72 ft.
Holliday field: Cochran & Cain, 7 Little, 20 bbl., 532-538 ft.
Anarene field: Panhandle Refining, 46 Green, 36 bbl., 1,110-23 ft.
Hull-Silk field: Cox & Hamon, 6 Anderson, 995 bbl., 4,355-4,415 ft.
Cox & Hamon, 6 Little "B," 38 bbl., 1,008-13 ft.
Bert Ligon, 8 Little, 55 bbl., 1,361-66 ft.
Bert Ligon, 4 White, dry at 1,650 ft.
Bert Ligon, 5 White, abandoned location.
Magnolia, 9 Rutty, 1,020 bbl., 3,728-58 ft.
Moran Brothers, 1 Ford, dry at 4,537 ft.
Phillips, 2 Little-Novella, 704 bbl., 4,355-4,417 ft.

Clay County

Wildcats: Akin, 1 H. C. Edrington, dry at 1,328 ft.
Bridwell, 13 Edrington, dry at 1,633 ft.
Franklin Drilling, 1 Staggs, dry at 6,769 ft.
Gant, 1 Edwards, dry at 6,069 ft.
Halsell field: Bridwell, 3 Halsell, 550 bbl., 4,700-71 ft.
Thornberry field: Sussex Oil, 5 Glasgow, abandoned location.
Sussex Oil, 7 Glasgow, dry at 219 ft.
Sussex Oil, 8 Glasgow, dry at 230 ft.
Roach, 1 Roach, dry at 275 ft.

Cooke County

Muenster field: Texas Co., 14 Walterscheid, 10 bbl., 690-712 ft.
Trumpter Petroleum, 3 Stacey, 20 bbl., 720-737 ft.

Jack County

Bryson field: Maracaibo Oil, 2 Owens, 340 bbl., 3,102-30 ft.
Panhandle Refining, 1 H. Derrick, 660 bbl., 3,137-50 ft.
Three Bee Investment, 2 Matlock, 120 bbl., 3,034-3,195 ft.

Montague County

Nocona field: Lesh-McCall, 1 Hinton, dry at 841 ft.
Wildcat: Gant and Continental, 1 Brown, dry at 7,341 ft.

Wichita County

S. E. Burkburnett field: Clark, 2 Warren, dry at 1,415 ft.
Deaton, 1 George, dry at 1,578 ft.
Taylor & Hellans, 1 Roller, dry at 1,650 ft.
Taylor & Hellans, 2 Roller, dry at 480 ft.
Taylor & Hellans, 3 Roller, abandoned location.

K.M.A. field: Consolidated, 1 Barnes, dry at 4,418 ft.
Fain-McGaha Oil, 19 Griffin, 960 bbl., 3,708-3,801 ft.
H. W. Hammon, 7 McCarty, 451 bbl., 3,584-3,840 ft.
Hammon, Hanlon & Buchanan, 22 Fassett & Tuttle, 432 bbl., 3,921-95 ft.
Hanlon-Buchanan, 8 Fassett & Tuttle, 420 bbl., 4,025-66 ft.
Hanlon-Buchanan, 10 Fassett & Tuttle, 311 bbl., 4,032-4,070 ft.
Shell & Phillips, 11 Preston, 1,184 bbl., 3,902-4,012 ft.
Electra field: Kolp, 7 Foster, abandoned location.
Walton, 20 Gulf Tank Farm, 5 bbl., 605-620 ft.
Warton, Jr., 9 Waggoner, 9 bbl., 1,580-92 ft.
Iowa Park field: Mason, 1 Minnick, dry at 700 ft.
Wolfe & Hull, 1 Kempner, 20 bbl., 691-95 ft.

Wilbarger County

South Vernon field: Waggoner, 5 Waggoner, 20 bbl., 2,382-91 ft.
Waggoner, 4 Waggoner, 18 bbl., 2,359-67 ft.
Waggoner, 1 Waggoner, dry at 1,900 ft.

Young County

Newcastle field: Baker, 1 Murris, dry at 698 ft.
Glover, 26 Johnson, dry at 600 ft.
Hawley & Smith, 1 Watson, dry at 721 ft.
Riner, 3 Logan, dry at 1,216 ft.
Graham field: Homestead Oil, 1 Stephens, 60 bbl., 3,756-67 ft.
Markley field: King, 3 Dailey, 8 bbl., 541-55 ft.

EASTERN TEXAS AREA

DALLAS, Tex., July 15.—The largest number of new locations in several months in the East Texas field featured the week's developments in the eastern Texas district. Since the recent official order was set by the Texas Railroad Commission returning the field to the old 2.32 per cent of hourly potential method of proration, operators holding small tracts in the field have started seeking spacing-rule exceptions in order to drill wells. During the week there was a total of 18 new locations staked, 5 being in the Longview area of Gregg County, 11 in the Kilgore area of Gregg County, and 2 in the Joiner area of Rusk County. Five new completions were reported for the field, two of them being among the new tests just reported the past week.

New wildcats for the east central area were reported in both Anderson and Henderson counties, both contracted to the Woodbine sand. The new operation for Anderson County is Wright Drilling Co., 1 Hart & Maberry, spotted in the R. W. Box Survey, 8 miles southwest of Elkhart. It is southwest of the wildcat gas well which blew out and was later abandoned by R. D. Williamson on the Rogers tract, Greenwood Survey.

In Henderson County E. B. LaRue has located his No. 1 R. H. Davis, SE cor. of the north 50 acres of the 100-acre Davis tract in the E. G. Harris Survey, 3 miles northeast of Stockard. The wildcat is a shift in location of the one spotted last week by the operator as his No. 1 Cora Rogers, Garza Survey. The Harris Survey adjoins the Garza Survey on the west. The location for the No. 1 Cora Rogers was abandoned.

Chapel Hill Field

The north end of the Chapel Hill field has been confined to oil production in the Pettit lime. The southern part of the field has been restricted to distillate and gas production from the Glen Rose lime. A well is now in the process of completion which extends the Pettit lime production into the southern part of the field, but still restricts the production only to distillate production. The well is Sun, 1 Sanders, first thought to be a Pettit lime oil producer which would have greatly enhanced the southern part of the field. As the week closed, the well, in the Manier Survey, was being prepared for gage through separator, only distillate and wash water being tested on initial swabbings. Becoming increasingly active, this deep field now has one well in the completion stage, two tests drilling and four locations being prepared for spudding.

EASTERN TEXAS COMPLETIONS

East Texas Field

(One-hour gages)

Gregg County

Longview area: B. F. Phillips, 9 W. M. Callum, 60 bbl., 3,546-56 ft.
Kilgore area: Producers Investment, 11 Butts, 40 bbl., 3,546-50 ft.
T. D. Humphreys, 24 Spear, 45 bbl., 3,548-74 ft.
T. H. Humphries, 2-AA Thomas, 27 bbl., 3,604-34 ft.

Upshur County

Longview area: S. J. Felsenthal, 6 W. F. Glenn, 40 bbl., 3,611-11½ ft.

East Central Texas

(24-hour gages)

Franklin County

Talco field: Humble, 20 Penn fee, 367 bbl., 4,204-91 ft.
Texas Co., 14 Barker, 420 bbl., 4,154-4,264 ft.

Henderson County

Wildcat: Bill LaRue, 1 Rogers, abandoned location.

(Continued on Page 92)

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Michigan Operations

By OTTO C. PRESSPRICH

SAGINAW, Mich., July 15.—Michigan oil operations dragged along uneventfully last week as but seven new producers were completed in contrast to the abandoning of 18 tests as dry holes. Meantime there was a revival in natural-gas development, three wells being completed during the week, the three having total initial production of 21,450,000 cu. ft. Three locations were abandoned and another operator temporarily abandoned a wildcat drilling operation in Cascade Township of Kent County.

The seven producing oil wells had combined initial daily output of only 767 bbl., with 400 bbl. coming from the Pure Oil B-5 Embrey, in Section 3 of Broomfield Township. The well marks an extension southeast of the Sherman-Broomfield pool in Isabella County.

Of 10 tests in Allegan County, only 1 was a producer. In Kent County three of the four Walker Township completions were producing wells ranging from 20 to 72 bbl. a day and there was one producer completed in Tallmadge of Ottawa County. Many of the dry holes were wildcat failures, well scattered over the Lower Peninsula.

American Drilling Co. was testing its No. 1-X State in Redding Township of Clare County with expectations of getting a fairly good producer. A Fremont Township, Saginaw County, test was scheduled to be abandoned by Freeman Oil Co. The test, No. 1 Krych, drilled into Dundee water. Currently the deepest active tests in the state, Carter Lease, Inc., 6 Carter, in Porter Township, Midland County, was near 4,700 ft., seeking oil pay in the Sylvania. The test was a Dundee producer a few years ago.

Fifteen of the 20 permits issued last week by the state were for locations in the southwestern section while Isabella County had one location, Clare three. Allegan County led again with six.

Last week's completions summary follows:

Allegan County

Dorr Township—Union Oil, 1 Alex Frary, SE NE NE 21-4n-12w, was abandoned as a dry hole at a depth of 1,650 ft.

Heath Township—Fletcher & Leman, Inc., reported production of 100 bbl. a day, after acid treatment, from No. 3 Nevenzel, S½ S½ NW NW 3-3n-14w, at a total depth of 1,506 ft., but the No. 1 M. Nevenzel, NE SW NW 5-3n-14w, was a dry hole at 1,570 ft. Fortney Oil, 1 John Minegar, NE SW SE 24-3n-14w, also was dry at 1,523 ft.

Martin Township—Keyson, 1 Audrey Steele, NW NW SW 32-2n-11w, was dry at 1,658 ft.

Overisel Township—Regal Dutch Petroleum, 1 G. Klingenberg, SE SE NE 33-4n-11w, was dry at 1,594 ft. Also dry at 1,534 ft. was W. Spencer Cook, 1 Harry Peters, NE SE NW 8-4n-11w. H. C. Nelson temporarily abandoned location for No. 1 Vrieling, NW NW NE Section 8, and No. 3 Vrieling, NW SW NE Section 8. Charles W. Cook abandoned location for No. 1 Richard Waters, NE NE NW Section 8.

Clare County

Lincoln Township—American Production, 4 D. W. Freckelton, C N½ SW 17-18n-5w, completed at 1,524 ft. as a natural-gas well, was producing 10,400,000 cu. ft. a day.

Sheridan Township—American Production Co. completed No. 1 Eberhart et al, C SW 31-17n-3w, 1,550,000 cu. ft. a day at 1,299 ft.

Isabella County

Broomfield Township—Pure Oil Co. reported the best well of the week, completing No. 5-B R. J. Embrey for after-acid production of 400 bbl. a day from a depth of 3,611 ft.

Wise Township—Richard W. Reading 2 Burwash-Reading, NW NE NW 16-16n-3w, was good for but 5 bbl. a day after being acid treated at total depth of 3,760 ft.

Jackson County

Hanover Township—Alfred G. Morency, 1 Ray Reed, SW SW SE 13-4s-2w, was dry at 1,510 ft.

Kent County

Cascade Township—Mesel & Spielberg temporarily abandoned No. 1 Faye Vandercook, SW SE NW 7-6n-10w, at 626 ft.

Walker Township—W. E. Dotson, 1 Roy J. Nichol, SE SW SW 20-7n-12w, was dry at 2,378 ft. R. E. King, 2 Nellie Walsh, SW NE NE 31-7n-12w, at 1,875 ft. reported production of 60 bbl. a day, after acid treatment. H. C. Williams was getting 20 bbl. a day, after acidizing, from No. 1 M. E. Beaumont et al, E½ NE NE 29-7n-12w, at total depth of 1,912 ft., and Smith Petroleum, 4 John Livingston, NW NE SE 32-7n-12w, rated 72 bbl. a day, after acid treatment, from a depth of 1,871 ft.

Montcalm County

Home Township—Belvidere, 1 Steinman, NE NW NW 21-12n-6w, completed at 1,290 ft. as a natural-gas well, had initial daily output of 9,500,000 cu. ft.

Pine Township—Sun, 1 L. V. Whitaker et al, NE NW NE 33-11n-8w, was dry at 3,265 ft.

Oceana County

Claybank Township—A dry hole at a depth of 2,170 ft., No. 1 A. Lacomte, NW NE SE 35-13n-18w, was abandoned by Welsh Oil Co.

Ottawa County

Holland Township—Clapsaddle & Harris, 1 City of Holland, NE SW NE 29-5n-15w, was dry at 1,508 ft.

Tallmadge Township—L. D. Hendershott, 1 Carl Johnson, SW SW SW 13-7n-13w, was dry at 1,930 ft. Also dry was No. 3 Lipski, NE NE SW 14-7n-13w, drilled to 1,885 ft. by Mesel & Spielberg. Gordon, 2 Mary Connell, NE SE SE 24-7n-13w, made 110 bbl. a day, after acid treatment, from a depth of 1,923 ft.

Tuscola County

Akron Township—James Blackmer, 1 L. J. Prime, S½ NE NW 19-14n-8e, was dry at 3,549 ft.

Van Buren County

Antwerp Township—T. K. Buzard abandoned No. 1 Max Schwinke, NW NW NW 16-35-13w, at 1,250 ft.

Arlington Township—W. R. Borough, Inc., reported No. 1 F. D. Smith, NW SE SW 25-25-15w, dry at 1,136 ft.

Bangor Township—John McLean, 2 Ellen Pierce, NW NW SE 21-2s-16w, was dry at 1,003 ft.

Porter Township—R. B. Tamblyn and Royal McLease abandoned No. 1 Leo Cornish, NW NE NE 28-4s-13w, when no oil showed to a depth of 1,202 ft.

Illinois Fields

(Continued from Page 64)

Magnolia, 118 J. H. Young.....SE NE NW 28-2n-2e
Devonian 3,423 ft., T.D. 3,530 ft., acid 4,000 gal., flowed 792 bbl.
Magnolia, 119 J. H. Young.....NE SE NW 28-2n-2e
Pay 3,463-3,505 ft., acid 4,000 gal., flowed 884 bbl.
Texas, 15 C. Klienschmidt.....NW NW NE 28-2n-2e
Pay 3,522-32 ft., acid 5,000 gal., flowed 961 bbl.
Pugh, 4 Tonline.....NE SW SW 30-2n-2e
Pay 3,498-3,540 ft., acid 5,000 gal., flowed 700 bbl.
Texas, 24 T. Stroup.....NE SE SW 30-2n-2e
Poor pay 3,415 ft., good pay 3,425-50 ft., acid 5,000 gal., flowed 984 bbl.
Texas, 26 T. Stroup.....NW SW SE 30-2n-2e
Poor pay 3,415 ft., good pay 3,430-44 ft., acid 5,000 gal., flowed 740 bbl.
Texas, 27 T. Stroup.....NW NW SE 30-2n-2e
Poor pay 3,500 ft., good pay 3,516-34 ft., acid 3,000 gal., flowed 1,497 bbl.
Texas, 28 T. Stroup.....SE SW SW 30-2n-2e
Poor pay 3,488 ft., good pay 3,502-22 ft., acid 5,000 gal., flowed 310 bbl.
Texas, 4 J. McConnonghay A.....SW SE SE 32-2n-2e
Poor pay 3,450 ft., good pay 3,462-80 ft., acid 5,000 gal., flowed 750 bbl.
Texas, 17 S. Stonecipher.....SE SW SE 32-2n-2e
Poor pay 3,435 ft., good pay 3,455-70 ft., acid 5,000 gal., flowed 92 bbl.
Texas, 22 M. Williams.....SW SW SW 32-2n-2e
Poor pay 3,315 ft., good pay 3,330-45 ft., acid 5,000 gal., flowed 837 bbl.
Hensley et al, 1 Fox.....NE SE SW 25-2n-1e
Devonian 3,560 ft., T.D. 3,652 ft., abandoned.
Picard, 1 West.....NE NE SE 35-2n-1e
Devonian 3,551 ft., T.D. 3,620 ft., abandoned.
Frazier, 1 Phillips.....NE SW NW 7-1n-2e
Devonian 3,459 ft., T.D. 3,562 ft., abandoned.
Texas, 52 City of Centralia.....NE NW NW 4-1n-2e
Poor pay 3,470 ft., good pay 3,485-3,505 ft., acid 5,000 gal., flowed 1,000 bbl.
Texas, 53 City of Centralia.....NW NW NW 4-1n-2e
Pay 3,454-93 ft., acid 5,000 gal., flowed 910 bbl.

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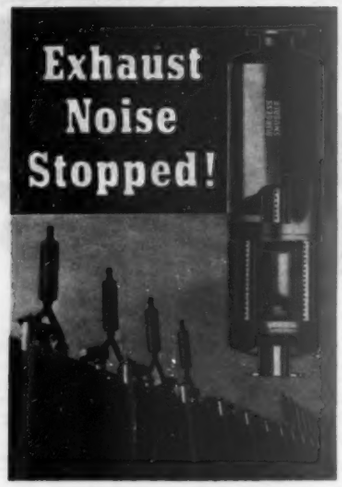

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Texas, 8 C. Reed A.....NW NE NW 5-1n-2e
Poor pay 3,332 ft., good pay 3,344-64 ft., acid 5,000 gal., flowed 713 bbl.
Texas, 13 H. Small.....NE NE NE 5-1n-2e
Poor pay 3,410 ft., good pay 3,423-42 ft., acid 5,000 gal., flowed 880 bbl.
Texas, 19 J. Canull.....SW NE NE 6-1n-2e
Pay 3,356-78 ft., acid 5,000 gal., flowed 800 bbl.
Texas, 20 J. Canull.....NE NE NE 6-1n-2e
Pay 3,332 ft., good pay 3,356-78 ft., acid 5,000 gal., flowed 525 bbl.

Wayne County Completions

Pure, 1 E. R. Hasselton A.....E½ SE SE 29-2n-8e
Fredonia 3,000 ft., pay 3,014-16 ft., T.D. 3,095 ft., acid 5,000 gal., flowed 631 bbl.
Pure, 1 E. Behymer C.....E½ SW SE 32-2n-8e
Fredonia 3,001 ft., 17 ft. pay in 4 streaks, 2,971-3,063 ft., T.D. 3,080 ft., acid 5,000 gal. flowed 895 bbl.
Pure, 4 Chas. Schofield.....W½ SE SW 33-3n-8e
Fredonia 3,006 ft., 10 ft. pay in 3 streaks, 3,010-87 ft., T.D. 3,103 ft.; acid 1,000 and 5,000 gal.. pumped 21 bbl. oil and 3 bbl. water.
Pure, 1 Robt. Maclin.....E½ NW NW 1-1n-7e
Fredonia 3,000 ft., 8 ft. pay in 2 streaks, 3,011-29 ft. and good show oil at 3,029-34 ft.; acid 5,000 gal.; flowed 664 bbl.
Duncan, 1 Taylor.....S½ SE NE 33-1s-7e
Rosiclair 3,260 ft., pay 3,279-81 ft., Fredonia 3,296 ft., (water) T.D. 3,332 ft., acidized 2,000 gal., pumped 151 bbl.
Roche & Voyles, 5 Carlson A.....NE SE SW 34-1s-7e
Fredonia 3,225 ft., 10 ft. pay in 2 streaks, 3,241-59 ft., T.D. 3,268 ft., acid 4,000 gal., flowed 960 bbl.
Smokey Oil, 2 Hanna.....SE SW SE 34-1s-7e
Rosiclair 3,195 ft., Fredonia 3,232 ft., St. Louis 3,304 ft., T.D. 3,392 ft., abandoned.
Bell Oil & Gas, 1 E. Kern.....NW NW NE 3-2-7e
Fredonia 3,205 ft., pay 3,236-47 ft., acid 5,000 gal., flowed 104 bbl.
New Penn Dev., 1 Chas. Pollard..NW NE SW 16-3s-9e
Fredonia 3,374 ft., McClosky 3,376-81 ft., acid 3,000 gal., flowed 175 bbl. oil and 15 bbl. water.

Edwards County

Jarvis Bros., W-1-A Wick.....NE SW NE 24-2s-10e
Ste. Genevieve 3,073 ft., McClosky 3,105-09 ft., acid 1,000 gal., flowed 222 bbl.
Superior, L. C. Green.....N½ NE SW 19-2s-11e
Devonian 4,897 ft., Dutch Creek 5,103 ft., T.D. 5,185 ft., abandoned.

Washington County

Leo Horton, 3 Miller.....NW NE SE 22-3s-3w
Benoist 1,269 ft., pay 1,285-94 ft., shot 5 qt. pumped 30 bbl. and some water.
Magnolia, 5 Gill estate.....SE SW NW 26-3s-3w
Benoist 1,250 ft., pay 1,279-84 ft., T.D. 1,286 ft., shot 5 qt., pumped 10 bbl. oil and 9 bbl. water.

Irvington Pool Completion

Gulf, 2 Buehl.....SW SE SW 23-1s-1w
Benoist 1,542-53 ft., pumped 528 bbl.

St. Clair County

Morrison, 1 H. A. Smith.....SW SW SE 31-3s-6w
Cypress 540 ft., Benoist 555 ft., T.D. 1,415 ft., abandoned.

White County

Pure, 1 Potter.....NE NW SW 9-4s-14w
Benoist 2,704-14 ft., pumped 81 bbl.
Pace & German, 3 Hon.....NW NW SE 9-4s-14w
Tar Springs 2,205-16 ft., pumped 153 bbl.
J. R. Haines, 1 Hon.....NE SE SW 9-4s-14w
Tar Springs 2,218-40 ft., Benoist 2,735-47 ft., plugged back to 2,240 ft., pumped 289 bbl.
Exchange-Ohio, 7 Rudolph.....NW NW NW 13-6s-9e
Waltersburg 2,268-82 ft., shot 10 qt., flowed 188 bbl.

Hamilton County

Pure, 2 E. Cuppy.....SE NE SW 6-6s-7e
Cypress pay 2,660-80 ft., T.D. 2,690 ft., shot 55 qt., pumped 65 bbl.
Pure, 3 E. Cuppy.....NE SE SW 6-6s-7e
Cypress 2,732-35 ft., pumped 287 bbl.
Kingwood, 1 Waring.....NE NW NE 14-6s-6e
McClosky 3,266-72 ft., St. Louis 3,355 ft., T.D. 3,358 ft., abandoned.
Shell, 2 M. J. Beagle.....NE SW SE 6-6s-7e
Cypress sand 2,660-98 ft., shot 15 qt., pumped 290 bbl.

Wabash County

National Petroleum, 1 J. Harness..SE SW NE 34-2n-13w
Fredonia 2,640 ft., T.D. 2,723 ft., abandoned.
Garner et al, 1 Putman.....NE NE SW 3-1n-13w
McClosky 2,698-2,734 ft., 12 ft. pay, in two streaks, T.D. 2,771 ft., P.B. 2,272 ft., acid 2,000 gal., pumped 157 bbl. oil and 137 bbl. water.
Longhorn, 9 Hell.....SE NW NW 18-3s-13w
Cypress 2,470-88 ft., shot 40 qt., T.D. 2,502 ft., pumped 14 bbl.

Clinton County

Eagleston, 1 Wilkin.....NW SW SE 10-2n-3w
Devonian 2,540 ft., porosity 2,573-94 ft., but no show oil, abandoned.
Southern Petroleum, 1 Deters....SW SW NE 11-2n-3w
Devonian 2,568 ft., porosity 2,616-29 ft., but no show oil, T.D. 2,705 ft., abandoned.
De Kalb Syndicate, 1 Hankle..NE SE NE 13-2n-2w
Benoist 1,374 ft., abandoned 1,385 ft.
Yager & Brown, 1 Steffens.....NW NW NE 1-1n-2w
Glen Dean, 1,025 ft., no Benoist, T.D. 1,352 ft., abd.
Pray & Bell, 4 H. Knolhoff.....SE SE SW 2-1n-2w
Benoist 1,317½ ft., T.D. 1,323 ft., shot 3 qt. pumped 94 bbl.

ILLINOIS OUTPOSTS

Shelby County

Walker, 1 O'dell.....C E½ SE NW 20-14n-2e
Chattanooga 2,190 ft.

Coles County

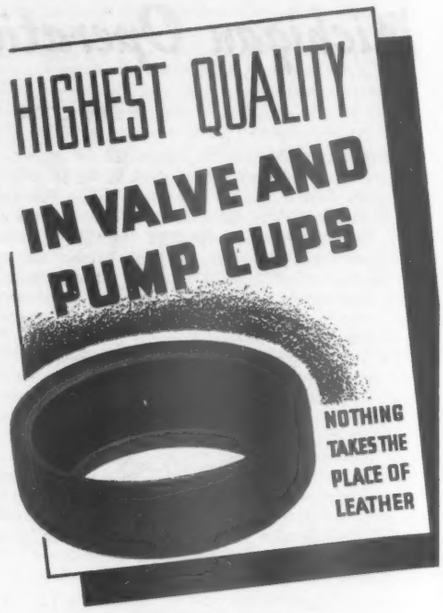
Carter, 1 Ohm.....C E½ NE NE 10-11n-7e
Cypress 1,760 ft., Cypress sand 1,767-82 ft. with no show oil, cored 1,828-37 ft., recovered 3 ft. tight saturated sand and 5 ft. of shaly sand.

Clark County

Har & Hawley, 1 Pinnell.....SE NW SE 6-11n-14w
Trenton 2,305 ft.

Montgomery County

Randall et al, 1 Street.....SW SW NE 31-11n-5w
Total depth 624½ ft., waiting on pump gage.
Topf et al, 1 Breitenbach.....C SE SE 13-9n-4w
St. Louis 1,060 ft., Warsaw 1,375 ft., Salem 1,175 ft.



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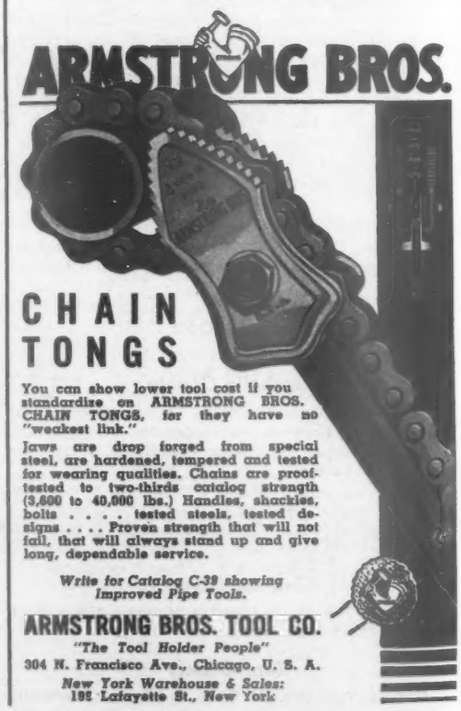

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Cole Creek Field Has Second Well; Big Gas Well in Utah

By T. R. INGRAM

DENVER, Colo., July 15.—The General Petroleum Corp. second well in the Shannon sand in Cole Creek, Wyoming, is pumping 14 to 15 bbl. an hour, with pump slowed down to half its capacity. Lance Creek had one completion in Continental, 7 Sam Joss, which made 528 bbl. initially from the Leo sand. Same company's deep test on the North Geary structure was plugged and abandoned after testing all horizons down to the Tensleep.

Cut Bank field in Montana had two completions, the best being Glacier Production, 5 Bonnett, which swabbed 262 bbl. in 24 hours. Other was Texas, 8 Unit 9, for 34 bbl. before shot. Kevin-Sunburst had four completions, including two 50-bbl. wells and one dry hole.

Continental, 107 Rattlesnake, Northwest New Mexico, had water in the Dakota and was abandoned. It was a semiwildcat. Southern Union Production Co. had a dry hole in its No. 11-B in Kutz Canon. Hughes-Continental, 1 Jicarilla-Apache, in Rio Arriba County, had water in the first Dakota and will go to the second or main Dakota.

The Clay Basin gas field in northeastern Utah was extended nearly a mile to the west in the Mountain Fuel Supply, 1 Government, which was completed for 15,214,000 cu. ft.

New operations included two in Lance Creek, two in the Frannie field, and one at Garland, Wyoming, one each in Fallon and Phillips counties, and two in Toole County, Montana.

COLORADO

An encouraging sign for Colorado is that three major companies which pulled out of the state 3 years ago when the Illinois play required their attention again have their representatives here going over the territory with a view to returning and renewing their activities. Their plans are not yet ready for announcement.

Larimer County

Continental Oil Co. is preparing to deepen its No. 2 Larson in the Fort Collins field from 4,520 ft., where it was completed in the Muddy sand in 1925 for 100 bbl. per day, to the Dakota. It is a north offset to No. 1 Meyer, the discovery in the Dakota in 1939. No. 1 Whitaker, south offset, was completed last week as a small well.

Lincoln County

Consolidated Smelting & Metals, 1 Hancock, Haswell district, eastern Colorado, which has been drilling intermittently since 1934, resumed at 2,900 ft. 3 months ago and is now making new hole. It had top of Dakota at 1,628 ft.; water in Morrison at 2,050 ft., with show of gas at 1,904 ft.; show black oil in third bench of Morrison at 2,076 ft.; and is headed for the Pennsylvanian.

WYOMING

Natrona County

General Petroleum, 31-21-G, in Cole Creek, is pumping 14 to 15 bbl. per hour from the Shannon sand at 4,520-69 ft. with pump slowed down to half capacity. Will not test at full capacity until new equipment is fully broken in.

Continental, 1 McGrath, C NW SW 15-34n-78w, North Geary dome test, was plugged and abandoned at 8,343 ft., total depth, in the Tensleep. Backed up and tested all sands, best show being 8 bbl. per day in Dakota at 6,350-80 ft.

Stanolind, 8 Unit ..... NW NE 26-40n-79w
T.D. 1,510 ft.; set whpstk. at 1,148 ft. to drill out of old hole.

General, 51-21-G ..... NW NW NE 21-35n-77w
Drlg. 1,917 ft.; cmtd. 11¾-in. at 212 ft.

General, 31-21-G ..... NW NE NW 21-35n-77w
T.D. 4,569 ft.; tstg.

Lewis Gebhart, 1 Govt. ..... NW NE SE 10-39n-78w
S.D. 1,327 ft.; C.D.

Royal Oil, 1 ..... SW SW SW 26-35n-80w
Drlg. 215 ft.; 12½-in. at 155 ft.

Niobrara County

Continental, 7 Sam Joss, NW SW NE 6-35n-65w, Lance Creek field, was completed at 5,149 ft. in the Leo sand at 5,124-49 ft., and flowed 528 bbl. the first 24 hours through the tubing.

Minnelusa, 6 Thompson, which was completed last fall at 5,506 ft. for 135 bbl. per hour, plugged back and drilled out of casing at 4,744 ft. in directional drilling to land new hole 75 ft. from bottom of old hole. Peculiar local condition prevented determination of source of water intrusion in the old hole and it was decided to go back into the sand in an entirely new hole rather than experiment further in trying to locate the trouble.

Two new operations by Continental are inside locations.

Continental, 12 Rohlff ..... SW NW SW 32-36n-65w
Loc.; (first report).

Continental, 6 Apex O.P.C.-3 .... SE NE NE 34-36n-65w
Loc.; (first report).

Park County

Two new operations in the Frannie field will be closely watched. V. M. Kirk has decided to go ahead with his No. 3 Government, a south offset to the Minnelusa, 1 Roney which recently was abandoned after running into a faulted zone. Continental Oil Co. also will go ahead with its No. 1 Prigge, across the line in Carbon County, Montana, which is to the north and west of the Minnelusa well, but believed to be more favorably located on structure. The Kirk well is a little higher on structure than the Minnelusa well and is expected to miss the fault. The Continental test is carried under Montana operations.

V. M. Kirk, 3 Govt. ..... NW NW SW 24-58n-98w
Drlg. 280 ft.

Yale Pet., 1-B Frisby ..... SW NE NE 31-52n-100w
Drlg. 1,445 ft.; surf. pipe at 98 ft.

Kinney-Coastal, 4 Govt. ..... SE NW 13-56n-98w
M.I.; (first report; Garland field).

Resolute, 2 State ..... SW SW 16-57n-101w
T.D. 8,519 ft.; R.U.R. to D.D.

MONTANA

Carbon County

Continental, 1 Prigge ..... SE SE SE 33-9s-25e
R.U.R.; contract to Manning & Martin, Inc.; (first report; Frannie field).

R. C. Tarrant, 2 McKay ..... SE NW 4-6s-18e
Drlg. 3,005 ft.

Choteau County

Security Pet., 1 Johnson ..... NE NE 23-26n-3e
Drlg. 2,248 ft.; 6⅝-in. at 2,197 ft.

Fallon County

Montana-Dakota Utilities, 143 .... SE NW NE 4-6n-60e
Drlg. below 500 ft.

Fergus County

Tony Co., 1 ..... CNL NE SW 36-22n-17e
Drlg. 105 ft.

E. & M. O. & G., 4 ..... SW SE SW 34-33n-18e
Drlg. 305 ft.

Glacier County

Glacier Production had a good completion in South Cut Bank in its No. 5 Bonnet, NW SE 4-32n-5w, which swabbed 262 bbl. the first 24 hours at 3,000 ft., total depth, and still in sand, from the Cut Bank at 2,962-3,000 ft. Main pay was at 2,795-3,000 ft. Sunburst at 2,939-57 ft. had a show of oil, but was cased off.

Texas, 8 Unit 9, NW NE 9-32n-5w, swabbed 34 bbl. the first 24 hours at 3,121 ft., total depth, from the Cut Bank sand at 3,074-3,120 ft. Main pay was at 3,110-18 ft. It was then shot with 30 qt. and is cleaning out.

Hill County

William Hanlon, 1 Govt. ..... SW NE 19-37n-15e
Spd. and S.D.

Phillips County

Montana-Dakota Utilities, 601 .... C SW SW 26-33n-32e
Spd. and skid rig upon running into boulders (first report).

Stillwater County

Texas, 1 Unit ..... SE NW 10-4s-19e
Building rig.

Toole County

Kevin-Sunburst field had four completions.

S. V. Day, 1 Halter, NE SE 17-35n-2w, was plugged and abandoned at 1,665 ft., total depth, after failing to obtain results from acidization.

H. O. and C. D. Stock, 1-A Government, SE NW SE 17-35n-2w, pumped 5 bbl. per day from the contact at 1,630-35 ft., after acidizing with 200 gal.

Enfield, 2 Zachor, SW NW NW 20-35n-1w, pumped 50 bbl. per day at 1,596 ft., total depth, from the top of the Madison after acidizing with 1,000 gal. This well is in the old east-side district.

Imperial-Craig, 4 Martin, NW SE 18-35n-1w, pumped 50 bbl. per day at 1,638 ft. from contact at 1,631-38 ft. after acidizing with 500 gal.

There were two new operations. One of these, Montana-Dakota Utilities, 1 Churchill, is in the Devon district, where it will try to develop a supply of gas.

Coolidge & Coolidge, 2 Midland Realty ..... NW SE SW 25-36n-2w
Drlg. 575 ft.; (first report).

Montana-Dakota Utilities, 1 Churchill SW NE 19-33n-2e
Drlg. 690 ft.; (first report).

Black Label Oil, 11 State ..... NE NW NE 16-35n-2w
Drlg. 900 ft.

Silver Oils, 3 Haskins ..... NE SW SW 25-36n-2w
Drlg. 1,020 ft.

Lion Oil, 5 Haugen ..... NW SE SE 11-35n-3w
Drlg. 600 ft.

A. E. Crumley & Son, 20 Fryberger ..... SW SW NE 24-35n-3w
Drlg. 350 ft.

Texas, 13 Bruins ..... W½ W½ SE 9-35n-2w
Drlg. 1,120 ft.

Coolidge & Coolidge, 8-A State NW SE NW 36-36n-2w
R.U.

NORTHWEST NEW MEXICO

McKinley County

Teague, Greer, 1 Santa Fe 33-18n-10w
S.D. 920 ft., for csg.

Petroleum Products, 8 State ..... SE SW 36-18n-9w
T.D. 1,578 ft.; tstg.

Rio Arriba County

Lafayette M. Hughes-Continental, 1 Jicarilla-Apache, test on the Dulce structure, had water in the first Dakota (Muddy) sand and is making a shutoff at 841 ft. and was abandoned at that depth. It is the most southerly well drilled in the field and ½ mile ahead of production.

Southern Union, 11-B, CEL NE SE 25-28n-11w, Kutz Canon district, missed the gas and was plugged and abandoned at 2,060 ft.

Claude Carroll, 1 Cornell ..... SW NE 11-29n-12w
Drlg. 1,010 ft.

Kutz, 1 Govt. ..... NW NW 28-28n-10w
Drlg. 1,280 ft.

San Miguel County

Southwest Drlg., 1 Conchas ..... NW NE 34-17n-21e
Drlg. 2,195 ft.

UTAH

Box Elder County

Utah Dutchess, 1 ..... NW cor. 26-14n-8w
Drlg. 400 ft.

Daggett County

The Clay Basin gas field had an important extension of the proven area for the Dakota sand in the Mountain Fuel Supply, 1 Government, SE NE NE 19-3n-24e. It was completed at 6,005 ft., total depth, with the 6⅝-in. at 5,936 ft., for an initial production of 15,214,000 cu. ft., open flow. Location is ¾ mile west and north of No. 1 Smith and 1⅛ miles west and south of No. 1 State. The proven area of the field now extends a little more than 3 miles east and west and 1½ miles north and south. It supplies gas to the company's trunk line into Utah through a connection with the Baxter Basin-Hiawatha system.

Mountain Fuel Supply, 5 Murphy SW NE SW 15-3n-24e
Building rig.

Grand County

Reeder Corp., 1 State ..... NE NE NE 16-22s-19e
T.D. 1,060 ft.; tsg.

Summit County

Longwell Pet., 1 ..... SE SW SE 35-3n-5e
T.D. 3,300 ft. in sd.; U.R. 4½-in. to bttm.

California Operations

By
L. P. STOCKMAN

Rio Bravo Outpost Watched As Operators Near Markers

LOS ANGELES, Calif., July 15.—Another California wildcat resisted concerted attempts to make it produce this week and another test well has reached the doubtful stage. The wildcat which failed to produce is No. 1 Cheney of A. T. Jergins Trust in 29-14-13. No. 1 Cheney is located near the town of Mendota in Fresno County and several miles northwest of several dusters drilled by Western Gulf and others during the past few years. This wildcat was drilled to 9,225 ft. where, upon failing to find a productive zone, the hole was plugged back to 7,350 ft. and an attempt made to produce from an upper member of the Cretaceous that contained a promising zone found during the course of work. This initial attempt to develop production was made several weeks ago; when the well failed to show anything resembling production the company decided to redrill the hole and make another attempt to test out the zone. The hole was accordingly redrilled from 6,700 ft. to 7,200 ft. and a perforated liner run in. On a production test this week the well failed to come up to expectations and the crew was laid off and drilling operations suspended. This wildcat which has been watched with considerable interest because of the attempt of the operators to prevent any information from reaching the outside on the test this week flowed for a short time and produced about 300 bbl. of oil with a small quantity of gas. As the company circulated 450 bbl. of oil this wildcat which had been expected to result in commercial production actually retained about 150 bbl. of the oil which was injected as a circulating medium.

The wildcat that has reached the dubious stage is No. 1 Brandt of Superior Oil Co., an outpost south of the Greeley field of Kern County, as the bit is rotating ahead at about 11,400 ft. without anything in the log to show except footage.

Crude-Oil Production

There has been a little tightening up in crude-oil production this month with the result that production during the first 10 days of July is approximately 5,000 bbl. per day below the same period last month. Current daily production of leading California oil fields follows:

	Barrels
Wilmington	85,625
Midway-Sunset	58,315
Kettleman Hills	44,775
Long Beach	44,125
Ventura Avenue	34,100
Santa Fe Springs	26,600
Huntington Beach	25,100
Montebello	19,760
Santa Maria Valley	17,625

Rio Bravo

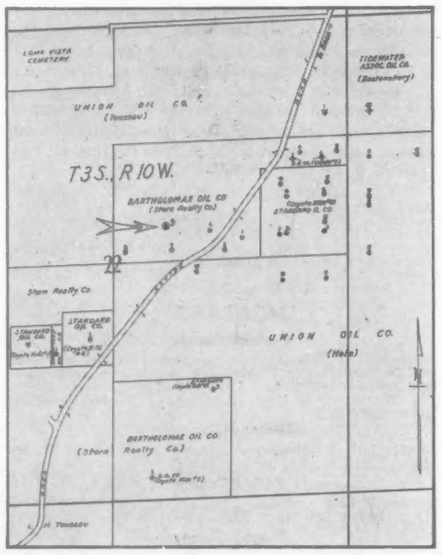
No. 1 Riggs of Superior Oil Co. in the Rio Bravo field of Kern County in 21-28-25 is the hottest well in the state at the present time. If this well obtains commercial production it will be contrary to the results of all seismograph surveys as these surveys indicate that the nose of the Rio Bravo field at this point is plunging off at a very rapid rate. Numerous bets have been made that No. 1 Riggs will not get production and also that the top of the productive Rio Bravo and Vedder zones will be found substantially deeper due to the plunge of the structure. The outcome of drilling on this well is of primary importance to many operators, primarily those holding leases in 20-28-25 and 21-28-25.

Several leases in the northwest end of the Rio Bravo field are due to expire within the next few weeks and several operators have taken top leases on some leases held by Superior Oil Co. Because of this, Superior Oil Co. is pushing work ahead as quickly as possible in No. 1 Riggs as this outpost which is located far out on the northwest edge of the Rio Bravo field will determine the future status of a number of leases. If the Rio Bravo and Vedder zones are found at a normal level and do not indicate a rapid plunge of the nose of the structure it will mean that the western limits of production are still open and additional drilling is justified. A definite marker should be found within the next 100 ft. of hole and therefore the status of No. 1 Riggs and its probable effect on future drilling in the northwest end of the field may be determined before the ink is dry on this survey.

Union Oil Co. completed another excellent flowing well in 34-28-25 this week when No. 56-34 Kern County Land was brought in flowing 1,410 bbl. of very clean 37.7-gravity oil and 1,620,000 cu. ft. of gas per day from 11,470 ft. That this new well is capable of greatly exceeding its initial is evidenced by the fact that production was brought in through a 22/64-in. bean with tubing and casing pressures of 1,600 lb. and 1,850 lb. respectively.

Coalinga

Four excellent wells were completed in the Southeast Coalinga field of Fresno County this week with an aggregate initial daily production of 11,456 bbl. This new production only represents a part of the capacity



Bartholomae Oil Co. discovered a new deep zone, in June 1940, at 6,580 ft. in the extreme western end of the East Coyote field of Los Angeles Basin. Its ultimate significance is conjectural but based on past production of the East Coyote field this discovery may prove to be of major importance

of these wells as the assigned initials are for the most part computed and based on the results of a short flow test immediately subsequent to completion. R. S. Lytle, operating as agent for Seaboard Oil Co., Honolulu Oil Corp. and various Doheny interests, finished two good wells this week and is putting the finishing touches on No. 33-7-F in 7-20-16. The latter well is scheduled for completion July 20. Lytle's new wells were No. 82-18-F in 18-20-16 completed flowing 2,092 bbl. of very clean 29.5-gravity oil and 1,380,000 cu. ft. of gas daily from the productive Gatchell sand with bottom of the hole at 8,291 ft. but the effective depth at 8,100 ft. and No. 68-18-F in 18-20-16 finished flowing 2,900 bbl. of clean 29.6-gravity oil and 3,000,000 cu. ft. of gas per day from the Gatchell sand with bottom of the hole at 8,051 ft. Lytle has been cutting down on drilling operations recently and present indications point to the probability that future work will be limited to about three or four strings of tools. This operator has completed practically all necessary offset drilling and is now in a position to restrict drilling to normal conditions.

In 13-20-15, Standard Oil Co. has completed No. 68-13-C on fee-owned acreage flowing 3,714 bbl. of clean 29.9-gravity oil and 2,588,000 cu. ft. of gas per day from the Gatchell sand with bottom of the hole at 7,900 ft. Production of this new well was produced through a 24/64-in. bean. Lytle used a 30/64-in. bean when completing No. 82-18-F but reduced the size to 24/64-in. in No. 68-18-F. Texas Co. finished its fifth good well on the Exeter fee acreage in 6-20-16 when No. 5 was brought in flowing 2,750 bbl. of clean 29.8-gravity oil and 2,900,000 cu. ft. of gas daily from the productive Gatchell sand with bottom of the hole at 8,150 ft. There was not very much difference in the depth at which the top of the Gatchell was cored in these wells but formations above this productive horizon varied to some extent. In Standard's No. 68-13-C top of the Kreyenhagen was found at 6,240 ft., top of the glauconitic was cored at 7,503 ft. and top of the Gatchell sand was cored at 7,608 ft. In Lytle's No. 82-18-F, top of the Kreyenhagen was logged at 6,470 ft., top of the glauconitic was found at 7,605 ft., top of the productive Gatchell sand was cored at 7,630 ft. and base of the Gatchell sand was found at 8,278 ft. The lower part of the Gatchell sand in this well looked wet and for this reason the bottom of the hole was plugged back from 8,291 ft. to 8,100 ft. No. 82-18-F penetrated 648 ft. of highly saturated Gatchell sand but because the bottom of the hole contained some gray sand the company only took in 470 ft. of oil sand. No. 68-13-C of Standard Oil Co. is producing from 292 ft. of Gatchell oil sand. In the Northeast Coalinga field, Amerada Petroleum Corp., Standard Oil Co., Union Oil Co., and the Getty-Pacific Western interests are all starting new wells. Union Oil Co. has just about completed final preparations on No. 55-18 Cook in the Northeast Coalinga field and this well which is located in 18-19-16 should be tanking oil within the next day or two. Foundation has gone in for No. 66-18 Cook in the same section and the Union's crews from No. 55-18 Cook will be used on this well. Wilshire Oil Co. is still battling with water in No. 62-30-B in 30-19-16 at the extreme southern edge of the Northeast Coalinga field and this well, now bottomed at 8,305 ft., will be plugged back as a water witch found water in the bottom of the hole.

Cole's Levee—Tupman

Drilling operations in the Cole's Levee field of Kern County in the San Joaquin Basin have been reduced to such a point that there are only a few strings of tools in operation. Recent developments indicate that the Cole's Levee field may not produce as much oil per acre as the Tupman field but it is still a little too early to make a definite prediction along that line. These two fields which for a time appeared to comprise one large field are now generally recognized as two separate entities with a small band separating the two areas. Richfield Oil Corp., the largest operator in these two fields with most of its present work centered in the Tupman field, continues to erect new derricks for future work. This company at present is running 13 strings of tools and has six wells drilling ahead below 9,000 ft. and four more making hole between 8,000 ft. and 9,000 ft. This indicates that Richfield Oil Corp. should complete 10 new wells within the next 30 days. This company's program calls for the completion of 100 wells in the Cole's Levee and Tupman fields in 2 years. Progress is ahead of schedule, however, and every indication points to the probability that the company will complete its present plan in less than the allotted time. Drilling costs are also lower than anticipated and it is quite probable, therefore, that Richfield will complete more than the 100 wells for which appropriations were budgeted a few months ago.

Richfield Oil Corp. completed two new wells in the Tupman field of Kern County this week although actual drilling was done by T. P. Pike Drilling Co., contractors. No. 18-28-A Kern County Land in 28-30-25 was finished flowing 1,398 bbl. of clean 40.1-gravity oil and 2,100,000 cu. ft. of gas per day through two 1⅛-in. beans from the Stevens sand with bottom of the hole at 9,025 ft. It has become customary to complete new wells in the San Joaquin Valley with large beans as this tends to reduce the completion time and keeps production down to a minimum as after the well has cleaned itself out the bean is reduced. No. 18-28-A Kern County Land was finished with 710 ft. of 6⅝-in. liner landed at 9,022 ft. and cemented through perforations at 8,622 ft. Perforations opposite the oil sand were at 8,624-8,780 ft. and 8,831-9,022 ft. Production is flowing through 9,007 ft. of 2½-in. tubing. Richfield's other completion in the Tupman field this week was No. 54-33-A Kern County Land in 33-30-25. This new well was finished flowing 945 bbl. of clean 33.9-gravity oil and 650,000 cu. ft. of gas daily from an effective depth of 9,265 ft. This well was carried down to 9,350 ft. but was plugged back when the bit was found to have drilled entirely through the productive zone. The hole was finished with an 8⅝-in. water string cemented at 9,010 ft. and 240 ft. of 6⅝-in. liner landed at 9,220 ft. and carrying perforations at 9,025-85 ft. and at 9,120-9,220 ft. Production is flowing through 9,195 ft. of 2½-in. tubing.

Paloma

Western Gulf Oil Co. completed its second well in the Paloma field of Kern County this week and immediately spudded in its third well, No. 34-2 Kern County Land, which is located in 2-32-26 about 2,500 ft. east of the discovery. The new well completed early this week was No. 74-3-A Kern County Land in 3-32-26. It was clocked at 960 bbl. of clean 53.1-gravity oil and 6,750,000 cu. ft. of gas per day from the equivalent of the Stevens sand. This new well was carried down to 11,216 ft. but when the Rio Bravo and Vedder sands had not been found at this depth and a survey indicated that they would not be found much above 13,000 ft. the company decided to plug back No. 74-3-A Kern County Land to the Stevens sand and complete in that zone. The hole was plugged back by stages from 11,216 ft. to 10,700 ft. and each interval of the zone was given a minute and complete test. These tests indicated that there was no continuous permeable sand body in the lower Stevens and the well was completed with an effective depth of 10,300 ft. at which point a bridge was placed. Top of the first Stevens oil sand was cored at 10,083 ft. and top of the second Stevens oil sand was logged at 10,138 ft. The zone at 10,300-90 ft. on a formation test flowed 850 bbl. daily and 35,000,000 cu. ft. of gas. The casing record in this well is interesting and consists of 10,052 ft. of 8⅝-in. and then 9,970 ft. of 5¾-in. casing to reinforce the 8⅝-in. for safety. The liner was 728 ft. of 5½-in. which was landed at 10,698 ft. and cemented through perforations at 10,085 ft. Perforations in the liner were at 10,092-10,285 ft. The Paloma field at present consists of three producing wells with two additional wells drilling. Western Gulf Oil Co. has completed two of the three wells that have been finished up to date and Ohio Oil Co. has completed the other. Operations of Western Gulf Oil Co. are carried on jointly with Texas Co., each of which has an undivided one-half interest in net production. No. 74-3-A Kern County Land which Western Gulf completed this week was doing 217 bbl. of clean 53.8-gravity oil this morning through an 11/64-in. bean and the company's field department was reducing the bean still more in order to reduce production to the allowable, 168 bbl. per day. Tubing and casing pressures behind the 11/64-in. bean were 3,000 lb. and 3,300 lb. respectively.

Ten Section

Shell Oil Co. completed another excellent well in the Ten Section field of Kern County in the San Joaquin Valley when No. 21-30-A Kern County Land in 30-30-26 was brought in flowing 1,734 bbl. of clean 36.5-gravity oil and 1,297,000 cu. ft. of gas per day from the Stevens sand with bottom of the hole at 8,190 ft. This new well which is located in the northwest end of the Ten Section field is probably capable of exceeding its established allowable but because of its location on the structure it would equal the production of some of Shell's wells on top of the structure. During the current week Shell spudded in No. 6-28-A Kern County Land in 28-30-26 and made 4,000 ft. of hole in a little over 4 days. No. 2-30 Kern County Land in 30-30-26 is just about ready to be spudded in and the bit will begin making hole within the next few days as the crews from No. 21-30-A Kern County Land will be back after time off. Shell Oil Co., Inc., has severely retarded drilling operations in the Ten Section field and since all of the productive acreage is held entirely by Shell this company has made strenuous efforts to develop it and produce the sands in the most beneficial manner. The Ten Section and Dominguez fields, the former in San Joaquin Valley and the latter in Los Angeles Basin, have been developed as close to the ideal as possible. For a time it was thought that Kettleman North Dome field by use of unit operation would establish a model of good operation but unrestricted production in the Huffman section of the field prevented attainment of that goal.

Los Angeles Basin

St. Anthony Oil Co. completed another excellent well in the Rosecrans field of Los Angeles County this week when No. 2 Gordon was finished flowing 2,500 bbl. of very clean 32.1-gravity oil and 1,500,000 cu. ft. of gas per day from the O'Dea zone with bottom of the hole at 7,854 ft. This new well which topped the oil sand at 7,313 ft. was finished with 536 ft. of 5½-in. liner landed at 7,844 ft. and carrying perforations at 7,338-7,844 ft. Union Oil Co. completed its third producing well on the Austin lease in the extreme western end of the Dominguez field this week flowing 960 bbl. of clean 32.3-gravity oil and 1,000,000 cu. ft. of gas per day from the eighth Callender zone with bottom of the hole at 7,540 ft. This new well is located north of three outpost wells completed several months ago by R. E. Havenstrite who now is drilling in other areas and will probably not undertake any additional drilling on the Larronde lease unless something changes the present outlook for the better. The Austin lease now being developed by Union Oil Co. laid idle for several months while Havenstrite was developing the Larronde lease at Dominguez because the landowner wanted too much royalty. After the heat was gone the landowner was unable to move the parcel at the high point and finally made a lease with Union Oil Co.

Wilmington

Two small Ranger zone wells were completed in the Wilmington field of Los Angeles Basin during the cur-

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rent week and it will probably be several weeks before any more large Terminal zone wells will be completed. Within the past few weeks three wells were completed that established potentials in excess of 8,000 bbl. each per day. This means that next month the umpire's staff will find it necessary to absorb 24,000 bbl. of new production from three wells alone. Continental Corp. which is developing a long narrow strip along the west bank of the Los Angeles County Flood Control Channel completed No. 9 L.A.C.F.C. this week flowing 512 bbl. of very clean 16.6-gravity oil per day through a 20/64-in. bean from 3,096 ft. This well, as well as all others completed by this company up to date in the Wilmington field, has been bottomed beneath the flood-control channel by directional drilling. No. 9 L.A.C.F.C. was finished with an 8⅝-in. water string cemented at 2,706 ft. and 424 ft. of 5½-in. liner landed at 3,094 ft. and carrying perforations at 2,703-3,094 ft. Morton & Elder have completed their No. 2 Harbor in the Wilmington field and this new well was brought in flowing 274 bbl. of clean 13.9-gravity oil per day through a 1-in. bean from the Ranger zone with bottom of the hole at 3,465 ft. This well was finished with 340 ft. of gravel packed 5¾-in. liner landed on bottom and perforated at 3,145-3,465 ft.

Coastal District

The Petrol Corp. which recently spudded in a new well on the Lakeview School property after the Board of Education had removed the school building to another location has created another hot spot in the Santa Maria Valley field of Santa Barbara County and present indications point to the probability that at least four new wells will be drilled as offsets and to protect properties from drainage. No. 1 Lakeview of Petrol Corp. is located in 27-10-34 and Union Oil Co. has already completed derrick for No. 3 Mallory in the same section and has location staked for No. 2-1 Bradley Lands which well will be a southeast offset located in 36-10-34. In the Ventura Avenue field of Ventura County, Tide Water Associated Oil Co. has completed No. 22 Hartman flowing 381 bbl. of 29.2-gravity oil per day along with 718,000 cu. ft. of gas from the 57 zone with bottom of the hole at 9,130 ft. This new well was finished with 7-in. water string cemented at 8,805 ft. and 311 ft. of 4¾-in. liner carrying 250-mesh perforations at 8,876-9,125 ft. which gives the well 249 ft. of formation from which to produce. In the Aliso Canyon field located in the San Fernando district of Los Angeles County but carried for convenience with fields of Ventura County because of proximity, Tide Water Associated Oil Co. has completed No. 22 Porter flowing 1,280 bbl. of clean 21.4-gravity oil and 375,000 cu. ft. of gas per day from 5,126 ft. Tide Water Associated Oil Co. at present controls all of the productive acreage in the Aliso Canyon field and since this company acquired some acreage from Union Oil Co. on a development basis it will probably continue to be the sole operator.

La.-Ark. Fields

(Continued from Page 65)

like the others in that formation at Waskom. The high gravity of the liquid and the high gas-oil ratio indicate that it is a high-pressure gas well, producing colored condensate, but further tests must be taken to prove the point.

NORTH LOUISIANA COMPLETIONS

Caddo—Caddo Parish

J. W. Brown, 3 Wells, 10-21-16, pumping 20 bbl., total depth 1,584 ft.
H. H. Gronemen, 2 Browning, 28-22-16, dry, total depth 2,650 ft.
R. L. Milam, 2 Bickham, 28-21-15, pumping 100 bbl., total depth 1,543 ft.
M. L. Miller, 1 Muslow, 31-21-15, pumping 50 bbl., total depth 1,568 ft.
Sklar Oil Corp., 4 Hobbs, 21-21-15, pumping 100 bbl., total depth 1,550 ft.
Stanolind, 2 Noel estate, 25-21-15, pumping 38 bbl., 50 per cent salt water, total depth 1,556 ft.
Texas, 23-B Noel, 14-21-15, 150 bbl. oil, 15 bbl. salt water, total depth 1,584 ft.
Sloan Wells, 2 Stiles, 32-21-16, pumping 25 bbl., total depth 2,404 ft.

Wildcat—Catahoula

Continental, 1 Tensas, N½ SW SW 12-9-7e, dry, total depth 9,215 ft.

Olla—La Salle Parish

Arkansas Fuel Oil, 1 Cruse, 610 ft. north, 660 ft. east, SW cor. 19-10-3e, 316 bbl., 10/64-in. choke, tubing pressure 170 lb., casing pressure 310 lb., total depth 2,246 ft.

Urania—La Salle Parish

La Salle Associated, 1 fee, 205 ft. north, 30 ft. west, SE SW SW 19-10-2e, pumping 75 bbl. fluid, 35 per cent salt water, total depth 1,590 ft.

Wildcat—La Salle Parish

G. W. Ziegen, 17 Louisiana Central, NW NE 36-11-2e, dry, 2,511 ft.

Wildcat—Natchitoches Parish

J. E. Watts, 1 Tanner estate, SW SW NW 18-10-10, dry, total depth 60 ft.

Monroe—Union Parish

Memphis Nat. Gas, 1 Potts, 15-21-3e, 2,000,000 cu. ft. gas, total depth 2,196 ft.

Cotton Valley—Webster Parish

Hunt, 6 E. L. Stewart, 200 ft. NW C NE SE 30-21-10, 216 bbl. distillate, ⅝-in. choke, tubing pressure 900 lb., casing pressure 2,200 lb., perforated 8,425-35 ft., "D" sand, total depth 8,435 ft.

ARKANSAS COMPLETIONS

Magnolia—Columbia County

Placid, 1-B J. W. Booth, SE SE 19-17-19, 540 bbl., ⅛-in. choke, tubing pressure 1,150 lb., casing pressure 800 lb., total depth 7,648 ft.
Southwood, 2 H. C. Couch, S½ SE SW 23-17-20, 264 bbl., 10/64-in. choke, casing and tubing pressure 1,300 lb., total depth 7,660 ft.

Wildcat—Miller County

Gulf, 1 Eaton, NW SW NE 14-17-27, dry, 3,894 ft.

Urbana—Union County

Marine, 11-A Thompson, 430 ft. north, 330 ft. east SW cor., SW SE 3-18-13, pumping 100 bbl. oil, 40 bbl. salt water, total depth 3,583 ft.

EAST TEXAS BORDER COMPLETIONS

Wildcat—Marion County

J. M. Horne, 1 W. F. Singleton, 1,331 ft. east, 50 ft. north, J. O. Jackson Survey, dry, 2,507 ft.

Wildcat—Shelby County

Superior Oil Co. of Tulsa, 2 Pickering Lumber Co., 1,020 ft. south, 467 ft. west, SW cor., W. J. Crane Survey, in B. H. Simpson Survey, dry, 2,116 ft.

Texas Gulf Coast

(Continued from Page 79)

ble, 1-B L. Ranch, southwest offset to the discovery well, is bottomed at 5,943 ft., and casing is being cemented following an electrical survey. Sand and sandy shale showing oil and gas was cored at 5,880-5,943 ft. Offsetting the discovery well to the north, Magnolia, 1 Four Way Ranch, perforated casing at 5,936-42 ft., and the well flowed wash water, gas and distillate through a ¼-in. choke. It has been killed and is being retested at 5,928-32 ft. In the west extension area, and about 1,200 ft. northeast of Barnsdall, 1 Lazarus, Magnolia, 1 Henshaw, is bottomed at 5,935 ft., with 5½-in. casing cemented on bottom. Sand and sandy shale showing oil and gas was logged at intervals from 5,743-5,935 ft. The same company's No. 1 Mitchell, a south offset, is making a cement squeeze job at 5,920-24 ft., while Wellington, 3 L. Ranch, northeast offset to the discovery, is coring in sand and shale below 5,919 ft., after a 10-minute drill-stem test at 5,700-26 ft., tested 365 lb. working pressure and 1 gal. of distillate.

Another Wilcox producer was being completed in the Ace field, Polk County, as Shell, 2 Kirby West, was flowing an estimated 5 bbl. of fluid per hour, while cleaning out through a ¼-in. choke. Sixty per cent of the fluid was pipe-line oil and the balance was wash water. The well was completed through perforated casing at 7,810-20 ft.

TEXAS GULF COAST COMPLETIONS

Brazoria County

Old Ocean field: Sun, 4 Borosodi, perforated casing 9,364-76 ft., 68 bbl., ⅞-in. choke.

Chambers County

Fig Ridge field: Sun, 1 Smith, perforated casing 8,849-53 ft., 84 bbl. fluid, less 2 per cent salt water, ⅛-in. choke.
South Cotton Lake field: Salt Dome, 2-H Lawrence, perforated casing 6,496-6,500 ft., 91 bbl., ⅛-in. choke.

Fort Bend County

Thompson field: Loffland, 1 State, sand 7,838-89 ft., 852 bbl., ¼-in. choke.
Gulf, 13 Wolters, sand 4,292-4,315 ft., 117 bbl., ⅛-in. choke.

Harris County

Fairbanks field: Amerada, Stanolind, 23 Foley, perforated casing 6,830-36 ft., 100 bbl., ⅛-in. choke.
Tomball field: Humble, 1 Allman, sand 5,557-73 ft., 40 bbl., ¼-in. choke.
Humble, 2-B Milo, sand 5,566-72 ft., 297 bbl., ¼-in. choke.

Jackson County

West Ranch field: Magnolia, 91-B West, perforated casing 5,588-94 ft., 430 bbl., ¼-in. choke.
Renwar, 3 Phillipi, sand 5,754-75 ft., 612 bbl., ¼-in. choke.
W.F.R., 1 State, perforated casing 5,732-44 ft., 632 bbl., ¼-in. choke.
Ganado field: Texas, 3 Mortgage Land & Investment Co., perforated casing 5,083-89 ft., 40 bbl., 9/64-in. choke.
Mauritz field: Seaport, 1 Mauritz, 6,014 ft., 657 bbl., ¼-in. choke.
Wildcat: Mayo, 1 Tucker, 6,505 ft., abandoned.

Jasper County

Rockland field: Midwest, 3 Boykin, 1,268 ft., 40 bbl. oil and 32 bbl. salt water, pumping.

Jefferson County

Lovells Lake field: Humble, 21 Broussard, sand 7,770-90 ft., 144 bbl., ⅛-in. choke.
Humble, 12 Jefferson Land Co., sand 7,776-89 ft., 190 bbl., ⅛-in. choke.

Liberty County

Hull field: Campbell Drilling, 1 Palmer, sand 2,977-93 ft., 206 bbl., ¼-in. choke.

Matagorda County

Bay City field: Midstate, 1 Parker, perforated casing 9,235-44 ft., 263 bbl., ¼-in. choke.

Wharton County

Pickett Ridge: Texas, 2 Wittig, sand 4,570-95 ft., 137 bbl., 13/64-in. choke.

East Texas Fields

(Continued from Page 86)

Smith County

Chapel Hill field: Sun, 1 Everhart, 271 bbl., 8,300-8,411 ft.

Titus County

Talco field: Adams-Lyle, 1 J. P. Page, 250 bbl., 4,317-28 ft.
Magnolia, 7 Chapman, dry at 4,378 ft.

WEST CENTRAL TEXAS AREA

FORT WORTH, Tex., July 15.—Three new discoveries, all shallow and considered relatively minor, were reported for the West Central Texas area. One was in Eastland County, one in Jones and one in Brown County.

The Eastland County discovery is Groover & Rose and Jones & Stasney, 1 McElreath, SW Section 104, Block 3, H.&T.C. Survey, about 4 miles southwest of Cisco. With a total depth of 3,030 ft., a total of 68 ft. of saturation was reported drilled from 2,960 to 3,028 ft. The zone was drilled in the Caddo lime and casing was cemented as the week closed. Plug will be drilled this week and the section given an acid treatment. The well was estimated at 25 to 30 bbl. naturally, better results being expected after acid treatment.

Jones County's new discovery is J. C. Hunter's No. 1 J. Sayles, located 330 ft. from the south and east lines of N½ Subdivision 8, R. Smith Survey 192, about 2½ miles northeast of the town of Hawley and about 1½ miles northeast of the Guitar field. The well was completed for 14 bbl. of oil and 178 bbl. of water per day after a 1,000-gal. acid treatment in the pay section drilled from 2,334-45 ft. Further development has not been announced for the area.

In Brown County, and opening a new Ranger lime field at the 2,300-ft. level, is a test drilled by Bob Elmore and others in the M. M. Cox lands, Lance Survey, 1¼ miles east of the Byrd Store field. The well gaged 82 bbl. of oil and 296,000 cu. ft. of gas daily from the pay drilled from 2,348-50 ft. The test is expected to link with the Byrd Store field.

Field Activity

Indicating a 1¾-mile-west and slight south extension for the widespread but little-developed Fagg field in Stephens County, J. R. Tolbert and others' test in the Martin lands, Section 1325, T.E.&L. Survey, 5 miles northwest of the town of Caddo, reported good shows of oil in the Marble Falls lime and sand zone prior to cementing casing. Plug is to be drilled early this week.

WEST CENTRAL TEXAS COMPLETIONS

(24-hour gages)

Brown County

Cross-Cut field: G. Eakin, 2 Gaines, 15 bbl., 1,909-18 ft.

Callahan County

Scranton field: Lanning, 2 Battle, 40 bbl., 1,729-32 ft.
Wildcats: Warren, 1 Pope, dry at 1,847 ft.
Thate, 1 fee, dry at 686 ft.
Street, 1 Hill, dry at 1,290 ft.
Putnam field: McBride, 1 Harp, dry at 401 ft.

Comanche County

Amity field: L. H. Choate, 5 and 6 Ayers, abandoned locations.
L. H. Choate, 1-B Shults, dry at 600 ft.
J. H. Whitesides, 4 Anderson, dry at 615 ft.

Jones County

Wildcats: Jones-Stasney, 1-A Humphrey, 152 bbl., 1,171-20 ft.
Hunter, 1 Sayles, 14 bbl. oil and 178 bbl. water, 2,334-45 ft.
Lewis field: Omohundro, 5 Adams, 166 bbl., 1,906-07 ft.

Palo Pinto County

Pickwick field: Adkisson, 10 Costello, 10 bbl., 1,410-16 ft.

Shackelford County

Wildcats: Terry, 1 Green, dry at 1,020 ft.

Stephens County

Rich field: Hughes, 1 Pruett, abandoned location.
Rich, 1 Castleman, abandoned location.

Taylor County

View field: S. & B. Oil, 1 Fain, 406 bbl., 2,387-98 ft.
Dunigan field: Eastland Oil, 2 Hunter, dry at 2,439 ft.

Summary of Operations in All Fields for June

SUMMARY OF OPERATIONS

Wells Completed

	Comp.	Prod.	Dry	Gas
Eastern fields	556	907	29	43
Ohio	104	334	42	34
Eastern Kentucky	5	60	1	15
Western Kentucky	150	784	39	1
Michigan	103	9,017	43	5
Illinois	415	265,912	77	1
Indiana	48	1,214	24	6
Kansas	225	59,386	46	7
Oklahoma	166	17,767	57	16
Missouri	2	0	2	0
Nebraska	1	744	0	0
N. Central Texas	223	64,915	64	3
West Texas	166	136,391	8	2
Texas Panhandle	42	8,341	3	6
East Texas	33	5,055	8	1
East Texas Border	8	165	4	1
Gulf Coast Texas	117	28,686	17	3
Southwest Texas	183	16,042	59	9
S.E. New Mexico	56	14,328	10	1
Arkansas	12	2,020	5	0
North Louisiana	57	4,130	9	8
Gulf Coast La.	87	18,100	24	1
Mississippi	17	5,990	9	0
Alabama	2	0	2	0
Montana	17	697	4	1
Wyoming	10	4,520	2	0
Colorado	1	281	0	0
N.W. New Mexico	3	150	2	0
Total June	2,709	665,936	581	164
Total May	2,750	642,645	593	159
Difference	41	23,291	12	5

Rigs and Wells Drilling

	Rigs	Dlg.	Ttl.
Eastern fields	82	578	660
Ohio	49	161	210
Eastern Kentucky	5	24	29
Western Kentucky	0	61	61
Michigan	16	164	180
Illinois	77	502	579
Indiana	9	64	73
Missouri	0	12	12
Nebraska	0	17	17
South Dakota	0	1	1
Arizona	0	7	7
Iowa	0	3	3
Kansas	42	245	287
Oklahoma	31	292	323
North Central Texas	153	309	462
West Texas	107	251	358
Texas Panhandle	37	119	156
East Texas	21	56	77
East Texas Border	3	22	25
Gulf Coast Texas	25	100	125
Southwest Texas	35	152	187
Southeast New Mexico	21	101	122
Arkansas	5	32	37
North Louisiana	9	61	70
Gulf Coast Louisiana	29	122	151
Mississippi	5	35	40
Georgia	0	4	4
Alabama	0	6	6
Florida	0	5	5
Montana	14	44	58
Wyoming	5	74	79
Colorado	3	31	34
N.W. New Mexico	0	12	12
Utah	3	5	8
Total June	786	3,672	4,458
Total May	820	3,664	4,484
Difference	34	8	26

KANSAS

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Barber	1	0	0	1	0	6
Barton	29	8,112	11	0	5	21
Butler	9	308	1	0	1	7
Cowley	12	2,016	7	1	1	13
Dickinson	0	0	0	0	0	1
Douglas	1	0	1	0	0	2
Ellis	20	6,665	3	0	2	20
Ellsworth	22	5,470	7	0	6	22
Graham	1	0	1	0	0	0
Grant	1	0	0	1	0	1
Greenwood	4	100	0	0	0	17
Jefferson	1	40	0	0	0	1
Johnson	1	0	0	1	0	2
Kearny	0	0	0	0	0	1
Kingman	1	0	1	0	0	1
McPherson	22	8,117	0	0	6	27
Marion	2	532	0	0	2	7
Ness	0	0	0	0	0	1
Pawnee	2	87	1	0	1	0
Phillips	0	0	0	0	0	2
Pratt	3	545	0	2	0	4
Reno	3	601	0	0	0	4
Rice	22	6,103	4	0	4	22
Rooks	2	486	1	0	2	7
Russell	50	16,340	5	0	9	37
Sedgwick	0	0	0	0	0	2
Stafford	15	3,864	3	0	2	16
Stevens	1	0	0	1	0	1
Trego	0	0	0	0	1	0
Ttl. June	225	59,386	46	7	42	245
Ttl. May	175	51,638	37	7	39	247
Difference	50	7,748	9	0	3	2

OKLAHOMA

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Atoka	0	0	0	0	0	3
Beckham	0	0	0	0	0	2
Caddo	6	3,236	1	0	1	22
Carter	6	99	0	0	2	8
Coal	0	0	0	0	0	2
Comanche	1	0	1	0	0	3
Cotton	1	0	1	0	0	2
Creek	16	661	3	2	1	20
Cleveland	0	0	0	0	0	1
Dewey	0	0	0	0	0	1
Garfield	0	0	0	0	0	1
Garvin	0	0	0	0	0	2
Grady	3	26	1	1	0	3
Grant	0	0	0	0	0	1
Hughes	2	0	1	1	0	2
Jackson	3	63	0	0	0	6
Jefferson	0	0	0	0	0	1
Kay	2	30	1	0	1	3
Kingfisher	0	0	0	0	0	1
Kiowa	2	0	2	0	0	8
Latimer	2	0	0	2	0	0
Lincoln	4	0	3	1	2	7
Logan	1	0	1	0	0	2
McClain	1	35	0	0	0	0
McIntosh	1	0	1	0	0	0
Marshall	0	0	0	0	1	6
Muskogee	3	102	0	1	0	0
Noble	1	684	0	0	0	3
Okfuskee	10	2,385	3	2	3	7
Oklahoma	5	2,463	1	0	0	13
Okmulgee	15	216	5	1	1	10
Osage	9	360	4	1	4	17
Pawnee	5	34	2	1	0	8
Payne	5	1,085	2	0	0	4
Pittsburg	1	0	1	0	0	0
Pontotoc	7	1,459	1	1	1	14
Pottaw'tomie	22	2,544	9	0	8	14
Seminole	13	1,924	3	1	2	13
Stephens	8	300	5	0	0	9
Texas	0	0	0	0	0	2
Tillman	1	0	1	0	0	5
Tulsa	4	51	0	0	0	13
Wagoner	6	10	4	1	0	14
Washita	0	0	0	0	0	1
Miscellaneous	0	0	0	0	4	38
Ttl. June	166	17,767	57	16	31	292
Ttl. May	180	19,656	74	7	33	293
Difference	14	1,889	17	9	2	1

NORTHWEST NEW MEXICO

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Bernalillo	0	0	1	0	0	1
McKinley	1	150	0	0	0	1
San Juan	1	0	1	0	0	5
San Miguel	0	0	0	0	0	1
Socorro	0	0	0	0	0	1
Torrance	0	0	0	0	0	1
Valencia	0	0	0	0	0	2
Ttl. June	3	150	2	0	0	12
Ttl. May	1	0	1	0	0	13
Difference	2	150	1	0	0	1

SOUTHEAST NEW MEXICO

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Chaves	1	0	1	0	0	2
De Baca	0	0	0	0	0	1
Dona Ana	0	0	0	0	0	2
Eddy	26	2,492	9	1	6	52
Lea	29	11,836	0	0	15	39
Luna	0	0	0	0	0	1
Otero	0	0	0	0	0	2
Roosevelt	0	0	0	0	0	1
Socorro	0	0	0	0	0	1
Ttl. June	56	14,328	10	1	21	101
Ttl. May	40	15,716	7	1	21	120
Difference	16	1,388	3	0	0	19

TEXAS PANHANDLE

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Carson	6	1,054	0	2	4	16
Childress	0	0	0	0	0	1
Cottle	0	0	0	0	0	1
Deaf Smith	0	0	0	0	0	1
Dickens	0	0	0	0	0	1
Gray	14	2,406	1	0	13	35
Hall	0	0	0	0	0	1
Hutchinson	19	4,881	1	2	14	42
Moore	2	0	0	2	2	8
Motley	0	0	0	0	0	1
Ochiltree	0	0	0	0	0	1
Potter	1	0	1	0	0	0
Sherman	0	0	0	0	0	1
Swisher	0	0	0	0	0	1
Wheeler	0	0	0	0	4	9
Ttl. June	42	8,341	3	6	37	119
Ttl. May	55	12,434	1	6	45	149
Difference	13	4,093	2	0	8	30

WEST CENTRAL AND NORTH TEXAS

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Archer	41	23,110	3	0	32	68
Brown	5	25	3	0	3	8
Baylor	2	0	2	0	1	2
Callahan	3	0	3	0	11	9
Clay	14	2,343	8	0	4	17
Coleman	4	1,080	1	1	2	6
Comanche	1	0	1	0	3	2
Cooke	15	1,681	3	0	10	12
Coryell	0	0	0	0	0	1
Denton	0	0	0	0	1	2
Erath	1	0	1	0	0	2
Eastland	0	0	0	0	2	4
Fannin	0	0	0	0	1	1
Fisher	0	0	0	0	0	1
Grayson	0	0	0	0	0	1
Hamilton	0	0	0	0	2	4
Hardeman	0	0	0	0	0	1
Hood	0	0	0	0	0	1
Jack	12	1,307	7	0	7	12
Johnson	0	0	0	0	0	1
Jones	13	1,887	3	0	4	15
Montague	10	10,980	2	0	9	23
Palo Pinto	1	0	1	0	1	6
Parker	0	0	0	0	0	4
Runnels	0	0	0	0	0	2
Shackelford	19	1,454	4	1	13	11
Stephens	5	1,593	0	0	4	4
Tarrant	0	0	0	0	0	2
Taylor	1	0	1	0	0	3
Throck'orton	0	0	0	0	0	2
Wichita	49	18,096	12	0	29	48
Wilbarger	8	1,105	2	0	1	6
Young	19	254	7	1	13	28
Ttl. June	223	64,915	64	3	153	309
Ttl. May	255	96,672	98	0	134	299
Difference	32	31,757	34	3	19	10

WEST TEXAS

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Andrews	1	114	0	0	0	7
Brewster	0	0	0	0	0	1
Crane	6	8,359	1	0	4	16
Concho	0	0	0	0	0	2
Cochran	0	0	0	0	0	1
Crockett	2	1,018	0	0	2	9
Culberson	0	0	0	0	0	1
Dawson	0	0	0	0	0	1
Ector	57	57,643	1	0	28	46
El Paso	0	0	0	0	0	1
Gaines	14	11,715	0	0	9	16
Hockley	7	5,764	0	0	4	16
Howard	0	0	0	0	2	7
Hudspeth	0	0	0	0	0	2
Loving	0	0	0	0	0	1
McCulloch	0	0	0	0	0	1
Mitchell	0	0	0	0	0	6
Nolan	0	0	0	0	0	1
Pecos	10	1,538	1	0	16	12
Presidio	0	0	0	0	0	2
Reagan	0	0	0	0	0	1
Reeves	0	0	0	0	0	1
Schleicher	0	0	0	0	0	1
Scurry	7	923	0	0	8	7
Stonewall	0	0	0	0	0	2
Sutton	0	0	0	0	0	1
Terrell	1	0	1	0	0	1
Terry	0	0	0	0	0	5
Tom Green	0	0	0	0	0	1
Upton	1	153	0	0	5	8
Val Verde	0	0	0	0	0	1
Ward	16	9,373	3	2	7	12
Winkler	5	797	1	0	4	9
Yoakum	39	38,994	0	0	18	52
Ttl. June	166	136,391	8	2	107	251
Ttl. May	147	120,117	9	1	138	232
Difference	19	16,274	1	1	31	19

SOUTHWEST TEXAS

Field—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Agua Dulce	2	30	1	0	1	3
Adami	0	0	0	0	0	1
Alice	0	0	0	0	0	1
Ben Bolt	2	673	0	0	0	2
Boyle	1	91	0	0	0	0
Bruni	0	0	0	0	0	1
Casa Blanca	0	0	0	0	0	2
Chacon Lake	2	4	0	0	0	0
Carroll	1	0	1	0	0	0
Cedro Hill	5	41	1	1	0	2
Colorado	4	794	0	1	0	3
Coleto Creek	0	0	0	0	0	2
Dale	2	164	0	0	1	0
Darst Creek	1	309	0	0	0	1
Driscoll	0	0	0	0	0	1
E. Flour Bluff	0	0	0	0	1	0
E. White Pt.	11	1,288	0	0	1	4
Escobas	2	40	0	1	0	0
E. Premont	0	0	0	0	0	1
Elm Creek	2	0	2	0	0	5
Fagan	1	0	0	1	1	0
Fox	1	24	0	0	0	0
Glen	4	1,456	0	0	0	3
Grayburg	1	0	1	0	0	0
Hayden	1	3	0	0	0	1
Gallagher	1	110	0	0	0	1
Heyser	1	0	1	0	0	1
Hoffman	1	75	0	0	0	1
Kelsey	1	102	0	0	0	1
Keeran	1	130	0	0	0	2
La Rosa	5	150	1	3	1	2
La Reforma	1	0	1	0	0	0
Longhorn	1	135	0	0	0	0
Luling	2	135	0	0	0	0
Manila	1	53	0	0	1	0
Minnie Bock	1	96	0	0	0	1
Margo	1	0	0	1	0	1
McCampbell	9	1,032	0	0	1	5
McFaddin	1	124	0	0	2	1
Mirando Valley	0	0	0	0	0	1
Midway	1	95	0	0	0	1
Mt. Lucas	0	0	0	0	1	0
Muralla	0	0	0	0	0	0
N. McFaddin	3	102	0	0	0	0
Oakville	1	0	1	0	0	1
N. Rincon	1	15	0	0	0	0
Peters	0	0	0	0	0	0
O'Hern	0	0	0	0	1	0
Orange Grove	3	582	0	0	2	0
Piedra De Lumbre	1	101	0	0	2	0
Premont	3	90	1	0	0	2
Pearsall	0	0	0	0	0	1
Plymouth	1	124	0	0	0	0
Refugio	0	0	0	0	0	1
Robstown	0	0	0	0	0	1
Rockdale	1	0	1	0	0	0
Ricaby	1	0	1	0	0	0
Riddle	0	0	0	0	0	1
Rincon	11	1,737	2	0	0	2
Salt Flats	2	77	0	0	0	0
Saxet	1	75	0	0	0	0
Samfordyce	1	122	0	0	0	2
S. Alice	1	0	1	0	0	0
S. Clara Driscoll	3	219	0	0	0	2
S. Alfred	3	288	0	0	0	3
Stratton	3	302	0	0	1	3
Sun	5	741	0	0	1	1
S. Calliham	1	0	1	0	0	0
Tarancahuas	4	624	0	0	0	4
Telferner	1	0	1	0	0	0
Tomoconnor	2	1,355	0	0	1	0
Thrall	2	0	2	0	0	0
Victoria	1	124	0	0	0	1
Volpe	6	305	2	0	0	2
Wade City	10	1,683	1	0	1	9
W. Cole	2	57	0	0	0	1
White Creek	1	165	0	0	0	2
Miscellaneous	37	30	36	1	15	82
Ttl. June	183	16,042	59	9	35	152
Ttl. May	220	19,437	71	5	34	175
Difference	37	3,395	12	4	1	23

EASTERN TEXAS

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Anderson	3	287	1	0	1	5
Angelina	2	0	2	0	0	1
Bowie	0	0	0	0	0	2
Camp	0	0	0	0	0	1
Cherokee	0	0	0	0	0	1
Delta	0	0	0	0	0	1
Falls	0	0	0	0	0	1
Fannin	0	0	0	0	1	1
Franklin	5	2,114	1	0	0	0
Freestone	2	44	1	0	3	1
Gregg	6	173	0	1	4	9
Henderson	0	0	0	0	1	0
Houston	1	0	1	0	0	4
Kaufman	0	0	0	0	0	2
Leon	0	0	0	0	0	2
Limestone	0	0	0	0	0	1
Red River	0	0	0	0	0	1
Rusk	4	72	1	0	3	7
Robertson	0	0	0	0	0	1
Smith	1	0	1	0	6	9
Titus	4	2,115	0	0	0	2
Upshur	5	250	0	0	1	3
Van Zandt	0	0	0	0	1	1
Ttl. June	33	5,055	8	1	21	56
Ttl. May	44	1,875	13	8	21	69
Difference	11	3,180	5	7	0	13

EAST TEXAS BORDER

County—	Comp.	Prod.	Dry	Gas*	Rgs.	Dlg.
Bowie	0	0	0	0	0	2
Cass	1	0	1	0	0	0
Harrison	1	0	1	0	1	2
Marion—Rodessa	1	0	0	1	0	1
Marion—other	5	165	2	0	2	12
Sabine	0	0	0	0	0	1
Shelby	0	0	0	0	0	4
Ttl. June	8	165	4	1	3	22
Ttl. May	6	225	3	1	7	16
Difference	2	60	1	0	4	6

*Gas production: Marion, Rodessa, 750,000 cu. ft.

TEXAS GULF COAST

Field—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Ace	0	0	0	0	0	1
Aita Loma	1	598	0	0	0	2
Anahuac	3	2,023	0	0	1	2
Anchor	0	0	0	0	0	2
Bammel	1	31	0	0	1	0
Bay City	1	210	0	0	0	3
Batson	3	42	0	0	0	1
Barbers Hill	1	457	0	0	0	1
Blessing	1	48	0	0	0	0
Buckeye	0	0	0	0	0	1
Capien	2	359	0	0	0	1
Cedar Point	1	144	0	0	0	1
Clear Lake	5	590	0	0	0	1
Clam Lake	0	0	0	0	0	1
Danbury	0	0	0	0	3	1
Dickinson	4	128	0	3	0	2
Esperson	1	68	0	0	0	2
Fannett	0	0	0	0	0	1
Fairbanks	2	265	0	0	1	1
Friendswood	2	518	0	0	0	1
Greens Lake	0	0	0	0	0	1
Ganada	0	0	0	0	0	1
Hardin	2	107	0	0	1	2
Hastings	0	0	0	0	1	0
High Island	1	359	0	0	1	0
Hilie	0	0	0	0	0	2
Hull	0	0	0	0	0	2
Humble	1	0	1	0	0	0
League City	2	0	2	0	0	1
La Belle	0	0	0	0	0	1
Lolita	2	418	0	0	1	5
Lovells Lake	4	468	1	0	0	2
Manvel	1	527	0	0	0	1
Mackey	1	0	1	0	0	0
Magnet	1	111	0	0	0	1
Martha	1	24	0	0	0	0
Mauritz	2	637	1	0	0	1
Orburn	1	120	0	0	0	0
Old Ocean	4	1,532	0	0	1	8
Orange	2	600	0	0	1	1
Pickett Ridge	2	190	0	0	1	1
Port Neches	1	0	1	0	2	0
Raccoon Bend	0	0	0	0	1	0
Rockland	0	0	0	0	0	1
Saratoga	0	0	0	0	0	1
Seabreeze	1	0	1	0	0	1
Segno	5	2,285	0	0	1	4
S. China	1	151	0	0	0	1
Sourger	2	933	0	0	0	2
Sheridan	0	0	0	0	0	1

Sour Lake	0	0	0	0	0	1
S. Cotton Lake	1	152	0	0	0	2
Thompson	10	2,547	1	0	1	4
Tomball	0	0	0	0	1	2
Van Vleck	0	0	0	0	0	1
W. Beaumont	2	215	0	0	1	0
W. Ranch	25	10,981	0	0	4	6
W. Columbia	2	297	1	0	0	3
Withers	5	551	0	0	2	3
Miscellaneous	7	0	7	0	2	12
Ttl. June	117	28,686	17	3	25	100
Ttl. May	107	24,663	20	1	25	103
Difference	10	4,023	3	2	0	3

COASTAL LOUISIANA

Field—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Anse la Butte	1	330	0	0	0	4
Bancroft	1	50	0	0	0	1
Barataria	0	0	0	0	2	1
Bateman Lake	0	0	0	0	1	0
Bayou Blue	0	0	0	0	1	2
Bayou Boullion	0	0	0	0	0	1
Bayou des Allemands	0	0	0	0	0	1
Bayou de Glaize	0	0	0	0	1	0
Bay St. Elaine	0	0	0	0	0	1
Bayou Pigeon	0	0	0	0	1	0
Black Bayou	0	0	0	0	0	1
Caillou Island	1	196	0	0	1	0
Charenton	6	527	3	0	1	2
Choctaw	0	0	0	0	0	1
Chalkley	1	113	0	0	1	1
Chacahoula	0	0	0	0	0	2
Cheneyville	1	222	0	0	1	1
Cameron Meadows	1	200	0	0	0	0
Darrow	2	519	1	0	0	1
Delta Farms	0	0	0	0	1	0
Dog Lake	1	16	0	0	1	0
E. Baton Rouge	3	686	0	0	0	1
Eola	7	2,167	2	0	1	5
Edgerly	0	0	0	0	0	1
Erath	1	0	1	0	0	1
Fausse Pt.	1	45	0	0	0	2
Four Isle	0	0	0	0	0	1
Gibson	0	0	0	0	0	1
Grandy Bay	1	368	0	0	1	2
Golden Meadows	13	2,578	0	0	2	11
Gillis	1	250	0	0	0	1
Garden Island	0	0	0	0	0	1
Grand Lake	4	1,051	0	0	0	2
Gueydan	0	0	0	0	1	0
Hackberry	0	0	0	0	0	4
Happytown	1	0	1	0	0	0
Horseshoe Bayou	0	0	0	0	1	0
Jeanerette	2	600	1	0	0	1
Jennings	0	0	0	0	1	4
Jefferson Island	1	362	0	0	0	2
Kenilworth	0	0	0	0	0	1
La Fourche Crossing	0	0	0	0	0	2
La Fitte	2	1,076	0	0	0	3
Lake Mongoulois	0	0	0	0	0	1
Lake Pelto	1	0	1	0	1	0
Lake Salvador	0	0	0	0	0	1
Leesville	0	0	0	0	0	1
Neale	1	420	0	0	0	2
N. Crowley	2	613	1	0	0	1
N. Elton	1	0	1	0	0	1
New Iberia	1	0	0	1	1	3
Paradis	1	973	0	0	0	1
Port Barre	2	392	1	0	0	1
Plumb Bob	1	540	0	0	0	1
Potash	1	504	0	0	1	0
Quarantine Bay	1	378	0	0	0	2
Raceland	0	0	0	0	0	1
Ritchie	1	18	0	0	0	0
Sorrento	1	0	1	0	0	1
S. Roanoke	1	293	0	0	0	0
Starks	0	0	0	0	0	2
Sulphur	1	268	0	0	0	3
Sweet Lake	1	250	0	0	1	0
S. Jennings	2	62	1	0	0	2
Valentine	1	528	0	0	1	0
Vermilion Bay	0	0	0	0	0	1
Ville Platte	5	1,305	0	0	2	8
Venice	1	200	0	0	0	1
Vinton	0	0	0	0	0	1
W. Lake Verrett	0	0	0	0	0	1
W. Cote Blanche	0	0	0	0	0	1
W. Gueydan	1	0	1	0	1	0
White Castle	0	0	0	0	0	2
Woodlawn	0	0	0	0	0	2
Miscellaneous	8	0	8	0	2	14
Ttl. June	87	18,100	24	1	29	122
Ttl. May	92	21,040	19	1	25	129
Difference	5	2,940	5	0	4	7

NORTH LOUISIANA

Parish—	Comp.	Prod.	Dry	Gas*	Rgs.	Dlg.
Bienville	1	0	0	1	1	1
Bossier	0	0	0	0	1	3
Caddo†	36	2,840	4	0	4	24
Catahoula	0	0	0	0	0	1
Claiborne	0	0	0	0	0	1
De Soto	1	0	1	0	0	1
Franklin	0	0	0	0	0	1
Grant	0	0	0	0	0	2
La Salle	2	1,285	0	2	1	14
Madison	1	0	1	0	0	0
Morehouse	2	0	0	2	1	0
Natchitoches	0	0	0	0	0	1
Ouachita	0	0	0	0	0	1
Red River	1	0	1	0	0	0
Sabine	2	5	1	0	1	5
Tensas	1	0	1	0	0	1
Union	3	0	0	3	0	1
Webster	0	0	0	0	0	4
Ttl. June	57	4,130	9	8	9	61
Ttl. May	51	4,110	7	6	6	58
Difference	6	20	2	2	3	3

*Gas production: Bienville Parish, 46,570,000 cu. ft.; La Salle Parish, 40,000,000 cu. ft.; Morehouse Parish, 5,000,000 cu. ft.; Union Parish, 4,500,000 cu. ft. †No Caddo, Rodessa, operations during June.

ARKANSAS

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Clark	1	0	1	0	0	3
Columbia	3	490	1	0	0	8
Dallas	0	0	0	0	1	0
Faulkner	0	0	0	0	0	1
Hot Springs	0	0	0	0	0	1
Howard	0	0	0	0	0	1
Lafayette	2	390	0	0	0	2
Lonoke	0	0	0	0	0	3
Miller*	2	790	1	0	0	1
Nevada	0	0	0	0	0	1
Ouachita	1	200	0	0	1	1
Paluski	0	0	0	0	0	1
Saline	0	0	0	0	1	2
Sevier	1	0	1	0	0	1
Union	2	150	1	0	1	6
Yell	0	0	0	0	1	0
Ttl. June	12	2,020	5	0	5	32
Ttl. May	15	3,625	4	0	6	31
Difference	3	1,605	1	0	1	1

*No Miller County, Rodessa, operations during June.

ALABAMA

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Choctaw	1	0	1	0	0	0
Greene	1	0	1	0	0	0
Houston	0	0	0	0	0	1
Lawrence	0	0	0	0	0	2
Marion	0	0	0	0	0	1
Mobile	0	0	0	0	0	2
Ttl. June	2	0	2	0	0	6
Ttl. May	0	0	0	0	1	7
Difference	2	0	2	0	1	1

MISSISSIPPI

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Attala	0	0	0	0	0	1
Carroll	0	0	0	0	1	0
Choctaw	0	0	0	0	0	1
Clarke	0	0	0	0	0	1
Copiah	0	0	0	0	0	1
Grenada	0	0	0	0	0	2
Hinds	0	0	0	0	0	1
Holmes	3	0	3	0	0	1
Humphreys	0	0	0	0	0	1
Issequena	0	0	0	0	0	1
Itawamba	0	0	0	0	0	1
Jefferson Davis	0	0	0	0	0	1
Kemper	0	0	0	0	0	1
Lamar	0	0	0	0	0	1
Le Flore	1	0	1	0	0	0
Madison	1	0	1	0	0	0
Monroe	0	0	0	0	0	1
Oktibbeha	0	0	0	0	0	1
Pike	0	0	0	0	0	1
Prentiss	0	0	0	0	0	1
Rankin	0	0	0	0	1	0
Scott	1	0	1	0	0	1
Smith	0	0	0	0	0	1
Tallahatchie	1	0	1	0	0	0
Warren	0	0	0	0	0	1
Washington	0	0	0	0	0	1
Yalobusha	0	0	0	0	1	2
Yazoo	10	5,990	2	0	2	11
Ttl. June	17	5,990	9	0	5	35
Ttl. May	30	6,935	18	0	6	35
Difference	13	945	9	0	1	0

GEORGIA

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Clinch	0	0	0	0	0	2
Dade	0	0	0	0	0	1
Montgomery	0	0	0	0	0	1
Ttl. June	0	0	0	0	0	4
Ttl. May	0	0	0	0	0	4
Difference	0	0	0	0	0	0

FLORIDA

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Dade	0	0	0	0	0	1
Levy	0	0	0	0	0	2
Suwannee	0	0	0	0	0	2
Ttl. June	0	0	0	0	0	5
Ttl. May	1	0	1	0	0	5
Difference	1	0	1	0	0	0

WESTERN KENTUCKY

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Ballard	0	0	0	0	0	1
Breckinridge	3	0	2	1	0	4
Butler	4	0	0	0	0	3
Caldwell	0	0	0	0	0	1
Christian	1	0	1	0	0	1
Daviess	19	666	12	0	0	12
Hancock	5	10	4	0	0	7
Henderson	1	0	1	0	0	6
Hopkins	0	0	0	0	0	2
Larue	0	0	0	0	0	1
Logan	1	0	1	0	0	2
McLean	1	40	0	0	0	4
Ohio	14	68	8	0	0	17
Todd	1	0	1	0	0	0
Ttl. June	50	784	30	1	0	61
Ttl. May	28	590	14	0	1	60
Difference	22	194	16	1	1	1

EASTERN KENTUCKY

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Magoffin	1	5	0	0	0	4
Knott	0	0	0	1	0	3
Floyd	0	0	0	5	0	6
Martin	0	0	0	4	2	3
Powell	4	55	1	0	0	2
Elliott	0	0	0	0	1	0
Pike	0	0	0	3	0	5
Breathitt	0	0	0	0	1	1
Morgan	0	0	0	2	1	0
Ttl. June	5	60	1	15	5	24
Ttl. May	9	92	0	8	7	31
Difference	4	32	1	7	2	7

Total gas production, 6,210,000 cu. ft.

ROCKY MOUNTAIN AREA

Wyoming

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Albany	0	0	0	0	0	2
Big Horn	0	0	0	0	0	4
Carbon	0	0	0	0	0	5
Converse	0	0	0	0	1	3
Crook	0	0	0	0	1	1
Fremont	0	0	0	0	0	6
Hot Springs	0	0	0	0	0	3
Lincoln	0	0	0	0	0	3
Natrona	0	0	0	0	0	7
Niobrara	4	3,495	0	0	1	10
Park	2	725	1	0	2	2
Sublette	1	185	0	0	0	9
Sweetwater	1	45	0	0	0	5
Uinta	0	0	0	0	0	5
Weston	2	70	1	0	0	7
Miscellaneous	0	0	0	0	0	2
Ttl. June	10	4,520	2	0	5	74
Ttl. May	12	8,612	3	0	12	69
Difference	2	4,092	1	0	7	5

Montana

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Big Horn	0	0	0	0	0	1
Blaine	0	0	0	0	0	2
Carbon	0	0	0	0	0	4
Choteau	0	0	0	0	0	1
Fallon	0	0	0	0	4	0
Fergus	1	0	0	1	0	3
Glacier	9	512	2	0	6	7
Hill	0	0	0	0	0	2
Petroleum	0	0	0	0	0	2
Pondera	0	0	0	0	0	2
Toole	7	185	2	0	4	14
Miscellaneous	0	0	0	0	0	6
Ttl. June	17	697	4	1	14	44
Ttl. May	26	2,780	3	2	7	48
Difference	9	2,083	1	1	7	4

Utah

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Ttl. June	0	0	0	0	3	5
Ttl. May	0	0	0	0	2	5
Difference	0	0	0	0	1	0

Colorado

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Boulder	0	0	0	0	0	1
Custer	0	0	0	0	0	1
El Paso	0	0	0	0	0	1
Fremont	0	0	0	0	0	2
Huerfano	0	0	0	0	0	7
Jackson	0	0	0	0	0	1
La Plata	0	0	0	0	0	1
Larimer	0	0	0	0	0	2
Las Animas	0	0	0	0	0	1
Logan	0	0	0	0	0	1
Moffat	1	281	0	0	1	4
Montezuma	0	0	0	0	0	1
Ouray	0	0	0	0	0	1
Park	0	0	0	0	0	1
Pueblo	0	0	0	0	0	1
Rio Blanco	0	0	0	0	2	3
Routt	0	0	0	0	0	1
Washington	0	0	0	0	0	1
Ttl. June	1	281	0	0	3	31
Ttl. May	1	0	1	0	2	31
Difference	0	281	1	0	1	0

MICHIGAN

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Allegan	27	2,472	14	0	4	32
Arenac	0	0	0	0	0	3
Barry	0	0	0	0	0	1
Berrien	0	0	0	0	0	1
Calhoun	0	0	0	0	0	2
Cass	0	0	0	0	0	4
Clare	12	502	5	4	1	7
Genessee	0	0	0	0	0	2
Gladwin	1	0	1	0	0	4
Gratiot	0	0	0	0	1	2
Hillsdale	0	0	0	0	0	1
Huron	0	0	0	0	0	1
Ingham	0	0	0	0	1	0
Ionia	1	0	1	0	0	0
Isabella	5	1,196	1	0	3	13
Jackson	0	0	0	0	0	1
Kalamazoo	0	0	0	0	0	2
Kent	15	2,363	1	0	0	16
Lenawee	0	0	0	0	0	3
Mackinac	0	0	0	0	0	1
Manistee	0	0	0	0	0	1
Mecosta	0	0	0	0	0	1
Midland	4	287	2	0	0	4
Missaukee	0	0	0	0	0	3
Monroe	3	38	1	0	2	11
Montcalm	2	0	1	1	0	5
Muskegon	2	0	2	0	0	3
Newaygo	0	0	0	0	0	2
Oakland	0	0	0	0	0	2
Oceana	0	0	0	0	0	1
Ogemaw	0	0	0	0	0	1
Osceola	1	0	1	0	0	1
Otsego	0	0	0	0	0	2
Ottawa	20	1,649	6	0	3	10
Saginaw	0	0	0	0	0	1
St. Clair	0	0	0	0	0	3
St. Joseph	1	0	1	0	0	0
Shiawassee	0	0	0	0	0	3
Tuscola	1	50	0	0	0	2
Van Buren	8	460	6	0	1	12
Ttl. June	103	9,017	43	5	16	164
Ttl. May	104	9,607	43	6	36	150
Difference	1	590	0	1	20	14

ILLINOIS

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Adams	0	0	0	0	0	2
Alexander	0	0	0	0	0	1
Bond	1	0	1	0	2	6
Brown	0	0	0	0	0	2
Clark	6	11	5	0	1	6
Clay	7	247	5	0	0	2
Clinton	53	134,621	7	0	7	79
Coles	2	102	1	0	0	2
Crawford	3	0	3	0	1	3
Cumberland	0	0	0	0	0	2
De Witt	0	0	0	0	0	1
Edgar	3	0	3	0	1	2
Edwards	9	307	3	0	0	2
Effingham	0	0	0	0	0	2
Fayette	61	8,727	12	0	19	107
Ford	0	0	0	0	0	1
Franklin	1	0	0	0	0	1
Fulton	0	0	0	0	0	1
Gallatin	0	0	0	0	1	2
Hamilton	6	1,500	0	0	2	10
Iroquois	0	0	0	0	0	1
Jackson	0	0	0	0	1	3
Jasper	3	554	1	0	1	4
Jefferson	4	199	2	0	0	1
Knox	0	0	0	0	0	1
Lawrence	1	0	0	1	1	6
Madison	3	0	3	0	0	3
Marion	141	103,386	11	0	13	120
Massac	0	0	0	0	0	2
McDonough	1	0	1	0	0	1
Monroe	2	30	1	0	1	2
Montgomery	1	0	1	0	2	8
Peoria	0	0	0	0	0	1
Pike	1	0	1	0	0	0
Pope	0	0	0	0	0	1
Randolph	1	5	0	0	1	3
Richland	11	2,448	2	0	2	9
Saline	0	0	0	0	0	2
Shelby	1	22	0	0	1	3
St. Clair	1	80	0	0	0	3
Tazewell	1	0	1	0	0	1
Vermilion	1	0	1	0	0	0
Wabash	19	1,693	6	0	5	21
Washington	7	109	4	0	2	8
Wayne	23	8,050	1	0	6	31
White	39	3,826	1	0	7	35
Williamson	2	0	0	0	0	0
Ttl. June	415	265,912	77	1	77	502
Ttl. May	401	220,079	58	0	83	458
Difference	14	45,833	19	1	6	44

OHIO

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
Allen	0	0	0	0	0	1
Ashland	2	0	2	0	0	4
Athens	11	20	3	6	5	11
Coshocton	0	0	0	0	1	1
Cuyahoga	1	1	0	0	1	1
Fairfield	2	1	0	1	1	2
Gallia	0	0	0	0	0	1
Geauga	0	0	0	0	0	1
Guernsey	2	0	0	2	3	5
Henry	1	10	0	0	0	0
Hocking	0	0	0	0	2	3
Holmes	1	0	0	1	3	4
Jackson	0	0	0	0	0	1
Jefferson	3	7	0	0	0	0
Knox	4	0	3	1	2	9
Lawrence	0	0	0	0	1	3
Licking	15	16	7	5	6	19
Lorain	9	40	5	2	3	2
Mahoning	0	0	0	0	0	1
Medina	12	45	6	0	1	11
Meigs	2	3	1	0	1	6
Monroe	5	5	2	2	4	13
Morgan	2	0	1	1	0	4
Muskingum	1	0	0	1	2	6
Noble	9	3	3	5	2	9
Perry	8	127	2	3	3	10
Putnam	1	20	0	0	1	1
Stark	1	0	1	1	0	9
Tuscarawas	4	0	1	3	1	7
Washington	7	37	3	1	5	14
Wayne	2	0	2	0	2	1
Wood	0	0	0	0	0	1
Ttl. June	104	334	42	34	49	161
Ttl. May	117	601	39	32	47	153
Difference	13	267	3	2	2	8

EASTERN FIELDS

County—	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.
N. Penn.- New York	445	562	3	3	41	335
S.W. Penna.	16	1	5	10	6	47
S.E. Ohio	44	251	7	6	13	51
West Va.	51	93	14	24	22	145
Ttl. June	556	907	29	43	82	578
Ttl. May	581	1,156	23	64	74	571
Difference	25	249	6	21	8	7

WILDCAT OPERATIONS

CALIFORNIA

IMPORTANT WELLS AND NORTHERN CALIFORNIA WILDCATS

Company, well, location and county—	S.T.R.	Depth	Status
Union Oil, No. 3 Mallory, Santa Maria, Santa Barbara	27-10-34	....	rig
Bolsa Chica Oil, No. 6 Hidden, Piru, Ventura	4- 4-18	....	grade
El Rancho Oil, No. 4 Elkins, Shiells Canyon, Ventura	9- 3-19	3,040	pump 50 b.d.
Coronet Oil, No. 1 Crown, Ojai, Ventura	17- 4-21	2,641	cleaning out
C. C. M. Oil, No. 32-B Hobson, Rincon, Ventura	8- 3-24	4,005	O.S. drlg.
Tide Water A. O., No. 7 V.L.W., Ventura Ave., Vent.	23- 3-23	7,940	O.S. drlg.
Tide Water A. O., No. 115 Lloyd, Ventura A., Ventura	26- 3-23	....	grade
Tide Water A. O., No. 22 Hartman, Ventura A., Vent.	22- 3-23	9,130	flow 381 b.d.
Shell Oil. No. 120 Taylor, Ventura Ave., Ventura	29- 3-23	7,600	flow 3,438 b.d.
Belridge Oil, No. 7-1 fee, North Belridge, Kern	1-28-20	8,190	O.S. drlg.
Continental Oil, No. 4 Result, North Belridge, Kern	36-27-20	8,294	completing
Hast Oil, No. 9 Kern, Kern River, Kern	34-28-28	626	bailing
Jergins Oil, No. 5-A McCowan, Edison, Kern	13-30-29	1,594	pump 100 b.d.
Mesa Pet., No. 1 Dixon, Fruitvale, Kern	27-29-27	3,614	testing
Pacific Western Oil, No. 1 Meyer, Wasco, Kern	7-27-24	10,323	will sidetrack
Union Oil, No. 56-34, KCL, Rio Bravo, Kern	34-28-25	11,470	flow 1,410 b.d.
Union Oil, No. 67-34, KCL, Rio Bravo, Kern	34-28-25	....	rigging up
Superior Oil, No. 2 Roe, Rio Bravo, Kern	27-28-25	10,840	sd. sh. drlg.
Superior Oil, No. 2 Rudnick, Rio Bravo, Kern	28-28-25	11,004	sd. sh. drlg.
Superior Oil, No. 3 Rudnick, Rio Bravo, Kern	28-28-25	....	bldg. rig
Superior Oil, No. 1 Riggs, Rio Bravo, Kern	21-28-25	10,740	sd. sh. drlg.
Superior Oil, No. 1 Brandt, Greeley, Kern	28-29-26	11,570	hd. sh. drlg.
Standard Oil, No. 11-13, KCL, Greeley, Kern	20-29-26	7,780	will P.B.
Standard Oil, No. 11-22, KCL, Greeley, Kern	18-29-26	11,395	O.S. drlg.
Standard Oil, No. 12-9, KCL, Greeley, Kern	7-29-26	10,891	sd. sh. drlg.
Standard Oil, No. 12-10, KCL, Greeley, Kern	7-29-26	10,071	sd. sh. drlg.
General Pet., No. 1 Wallace, Greeley, Kern	1-29-25	9,660	sd. sh. drlg.
Shell Oil, No. 8-19-A, KCL, Ten Section, Kern	19-30-26	8,097	flow 2,102 b.d.
Shell Oil, No. 2-30-A, KCL, Ten Section, Kern	30-30-26	....	rigged up
Shell Oil, No. 21-30-A, KCL, Ten Section, Kern	30-30-26	8,190	cmtd. 8,018
Ohio Oil, No. 7-E, KCL, Canal, Kern	14-30-25	8,327	O.S. drlg.
Ohio Oil, No. 20-E, KCL, Canal, Kern	13-30-25	....	rigging up
Richfield Oil, No. 18-28-A, KCL, Tupman, Kern	28-30-25	9,025	flow 1,397 b.d.
Richfield Oil, No. 76-30-A, KCL, Tupman, Kern	30-30-25	....	rig
Richfield Oil, No. 78-30-A, KCL, Tupman, Kern	30-30-25	9,066	P.B. 8,955
Richfield Oil, No. 18-33-A, KCL, Tupman, Kern	33-30-25	9,785	will redrl.
Richfield Oil, No. 54-33-A, KCL, Tupman, Kern	33-30-25	9,265	flow 945 b.d.
Richfield Oil, No. 18-29-A, KCL, Tupman, Kern	29-30-25	....	rigging up
Richfield Oil, No. 34-29-A, KCL, Tupman, Kern	29-30-25	8,950	O.S. drlg.
Richfield Oil, No. 38-29-A, KCL, Tupman, Kern	29-30-25	9,000	O.S. drlg.
Richfield Oil, No. 78-28-B, KCL, Cole's Levee, Kern	28-30-25	9,025	O.S. drlg.
Standard Oil, No. 20-6, KCL, Cole's Levee, Kern	5,31-25	9,502	P.B. 9,370
Exeter Oil, No. 8 Murphy, Midway-Sunset, Kern	28-32-24	3,137	cleaning out
Western Gulf-Texas, No. 74-3-A, KCL, Paloma, Kern	3-32-26	10,706	flow 960 b.d.
Western Gulf-Texas, No. 34-2, KCL, Paloma, Kern	2-32-26	1,398	rd. sh. drlg.
Ohio Oil, No. 3-B, KCL, Paloma, Kern	3-32-26	420	rd. sh. drlg.
Richfield Oil, No. 1 Ranch, Tejon Ranch, Kern	2-10-19	6,688	fish D.P.
Richfield Oil, No. 2 KCL, Wheeler Ridge, Kern	28-11-20	4,880	hd. sd. drlg.
Chapman, A. E., No. 1 Tejon, San Emidio, Kern	14-10-23	1,894	sd. sh. drlg.
Logan, J. E., No. 44 Yearout, Cantua, Fresno	26-16-14	8,199	sd. sh. drlg.
Continental Oil, No. 1 Joint, Jacalitos, Fresno	4-22-16	5,860	sd. sh. drlg.
Jergins Trust, No. 1 Cheney, Panoche Creek, Fresno	29-14-13	9,225	P.B. 7,350
Texas Co., No. 1 S.P., Turk Anticline, Fresno	23-17-15	9,356	flow 10 b.d.
Shell Oil, No. 45-2, East Coalinga, Fresno	2-20-15	3,639	pump 50 b.d.
Tide Water A. O., No. 1 Union, N. E. Coalinga, Fresno	6-19-16	....	bldg. rig
Standard Oil, No. 77-19-B fee, NE Coalinga, Fresno	19-19-16	8,115	sd. sh. drlg.
Standard Oil, No. 86-19-B fee, NE Coalinga, Fresno	19-19-16	7,898	sd. sh. drlg.
Amerada Pet., No. 3-20-8 Ewing, NE Coalinga, Fresno	20-19-16	7,850	sd. sh. drlg.
Amerada Pet., No. 1-17-B S.P., NE Coalinga, Fresno	17-19-16	....	rig
Amerada Pet., No. 38-9 S.P., NE Coalinga, Fresno	9-19-16	8,850	sd. sh. drlg.
Wilshire Oil, No. 62-30-B, NE Coalinga, Fresno	30-19-16	8,305	mill liner
Union Oil, No. 55-18 Cook, NE Coalinga, Fresno	18-19-16	8,155	O.S. drlg.
Union Oil, No. 66-18 Cook, NE Coalinga, Fresno	30-19-16	....	rig
Lytle, R. S., Agent, No. 33-7-F, SE Coalinga, Fresno	7-20-16	6,991	O.S. drlg.
Lytle, R. S., Agent, No. 68-18-F, SE Coalinga, Fresno	18-20-16	8,051	flow 1,500 b.d.
Lytle, R. S., Agent, No. 82-18-F, SE Coalinga, Fresno	18-20-16	8,100	flow 2,092 b.d.
Lytle, R. S., Agent, No. 84-18-F, SE Coalinga, Fresno	18-20-16	....	rigging up
Lytle, R. S., Agent, No. 88-18-F, SE Coalinga, Fresno	18-20-16	5,252	sd. sh. drlg.
Texas Co., No. 5 Exeter, SE Coalinga, Fresno	6-20-16	8,085	O.S. drlg.
Standard Oil, No. 68-13-C fee, SE Coalinga, Fresno	13-20-15	7,900	flow 3,712 b.d.
Standard Oil, No. 22-17-F fee, SE Coalinga, Fresno	17-20-16	7,940	recmtd. 7,903
Standard Oil, No. 1-19-F fee, SE Coalinga, Fresno	19-20-16	7,960	O.S. drlg.
Standard Oil, No. 44-19-F fee, SE Coalinga, Fresno	19-20-16	5,862	sd. sh. drlg.
Standard Oil, No. 51-19-F fee, SE Coalinga, Fresno	19-20-16	7,455	O.S. drlg.
Standard Oil, No. 62-19-F fee, SE Coalinga, Fresno	19-20-16	6,172	sd. sh. drlg.
Superior Oil, No. 5-B Cagle, SE Coalinga, Fresno	6-20-16	7,776	flow 1,320 b.d.
Lytle, R. S., Agt., No. 5 Felix, Kettleman N Dome, Kgs.	35-21-17	2,996	sd. sh. drlg.
Union Oil, No. 9 King, Kettleman North Dome, Fresno	29-21-17	10,914	fish junk
K. N. D. A., No. 322-18-J, Kettleman N Dome, Fresno	18-21-17	10,485	hd. sh. drlg.
K. N. D. A., No. 23-20-J, Kettleman N Dome, Fresno	20-21-17	9,780	hd. sh. drlg.
K. N. D. A., No. 36-20-J, Kettleman N Dome, Fresno	20-21-17	9,482	fish D.P.
K. N. D. A., No. 58-18-Q, Kettleman N Dome, Kings	18-22-18	7,770	sd. sh. drlg.
K. N. D. A., No. 23-20-Q, Kettleman N Dome, Kings	20-22-18	....	rig
K. N. D. A., No. 27-26-Q, Kettleman N Dome, Kings	26-22-18	7,852	sd. sh. drlg.
K. N. D. A., No. 68-26-Q, Kettleman N Dome, Kings	26-22-18	8,485	recmtd. 7,977
Standard Oil, No. 334-29-J, Kettleman N Dome, Fresno	29-21-17	10,120	sd. sh. drlg.
Tide Water A. O., No. 35-22 Daniel, Trico, Tulare	22-24-23	9,790	hd. sh. drlg.
Cal. Fuel Oil, No. 3 Alberta, Huasna, San Luis Obispo	5-32-13	3,291	sd. sh. drlg.
Superior Oil, No. 1 Tar Springs, Huasna, San L. Obis.	24-32-14	3,550	sd. sh. drlg.
Wilshire Oil, No. 3 Cowell, Half Moon Bay, San Mateo	17- 6- 5	1,843	sd. sh. drlg.
Bishop Oil, No. 1 Willmar, Rio Vista, Sacramento	21- 4- 3	3,291	sd. sh. drlg.
Standard Oil, No. 1 State, Duck Island, Sacramento	31- 4- 3	....	rig

IMPORTANT WELLS AND SOUTHERN CALIFORNIA WILDCATS

Company, well, location and county—	S.T.R.	Depth	Status
Union Oil, No. 3 Austin, Dominguez, Los Angeles	32- 3-13	7,540	O.S. drlg.
Union Oil, No. 77 Callender, Dominguez, Los Angeles	29- 3-13	7,450	cleaning out
Union Oil, No. 14 Carson, Dominguez, Los Angeles	33- 3-13	8,095	redrlg 7,910
Shell Oil, No. 106 Reyes, Dominguez, Los Angeles	33- 3-13	5,893	sd. sh. drlg.
Seaport Oil, No. 1 Dasteel, Dominguez, Los Angeles	32- 3-13	8,209	P.B. 8,121
Wood-Mellon Oil, No. 1 West, Dominguez, Los Ang.	31- 3-13	6,460	reaming
Mission Oil, No. 1 Pierce, Rosecrans, Los Angeles	20- 3-13	8,557	completing
Crest Oil, No. 1 Wolf, Rosecrans, Los Angeles	20- 3-13	6,531	sd. sh. drlg.
So. Cal. Pet., No. 13 Maxwell, Rosecrans, Los Ang.	19- 3-13	....	rig
So. Cal. Pet., No. 1 Van Nuys, Rosecrans, Los Ang.	19- 3-13	3,997	sd. sh. drlg.
St. Anthony Oil, No. 2 Gordon, Rosecrans, Los Ang.	19- 3-13	7,854	flow 2,500 b.d.
St. Anthony Oil, No. 4 Gordon, Rosecrans, Los Ang.	19- 3-13	....	rigging up
Kelly & Sons, No. 3 McMillen, Rosecrans, Los Ang.	19- 3-13	7,550	O.S. drlg.
Union Oil, No. 42 Rosecrans, Rosecrans, Los Ang.	18- 3-13	7,543	sd. sh. drlg.
Chicago Oil, No. 1 Founders, Rosecrans, Los Angeles	20- 3-13	7,963	P.B. 7,335
Thorley Oil, No. 1 Athens, Rosecrans, Los Angeles	7- 3-13	7,883	O.S. drlg.
Inca Oil, No. 1 Union, Rosecrans, Los Angeles	18- 3-13	7,694	sd. sh. drlg.
Bush Oil, No. 1 Sentous, Inglewood, Los Angeles	17- 2-14	7,355	idle
Basin Oil, No. 9-C Club, Potrero, Los Angeles	34- 2-14	1,984	sd. sh. drlg.
Casa Grande Oil, No. 1 Lopez, San Fernando, L. A.	1- 2-15	3,785	cleaning out
Parry, G. C., No. 1 Moynier, San Fernando, L. A.	6- 2-14	4,174	sd. sh. drlg.
Tide Water A. O., No. 14 Porter, Aliso Canyon, L. A.	27- 3-16	3,951	sd. sh. drlg.
Tide Water A. O., No. 22 Porter, Aliso Canyon, L. A.	27- 3-16	5,088	O.S. drlg.
Brit. Amer. Oil, No. 1 Perkins, Newhall, Los Angeles	14- 3-16	6,196	P.B. 5,834
Creighton-Hammon Synd., No. 1 C-H Newhall, L. A.	17- 3-16	810	sd. sh. drlg.
Havenstrite, R. E., No. 1 Lincoln, Newhall, L. A.	16- 4-17	2,990	sd. sh. drlg.
Barnsdall Oil, No. 11 R.S.F., Newhall, Los Angeles	26- 4-17	5,900	sd. sh. drlg.
Barnsdall Oil, No. 12 R.S.F., Newhall, Los Angeles	26- 4-17	5,650	sd. sh. drlg.
General Pet., No. 9 Blinn, Wilmington, Los Angeles	35- 4-13	3,360	completing
Barnhart & Morrow, No. 3 Comm., Wilmington, L. A.	32- 4-13	3,720	completing
Continental Corp., No. 9 L.A.C.F.C., Wilmington, L.A.	2- 5-13	3,096	flow 512 b.d.
Continental Corp., No. 10 L.A.C.F.C., Wilming., L.A.	2- 5-13	2,683	sd. sh. drlg.
Dumm Bros. Pet., No. 7 Harbor, Wilmington, L. A.	32- 4-13	3,003	sd. sh. drlg.
Gremac Oil, No. 7 Harbor, Wilmington, Los Angeles	35- 4-13	2,398	sd. sh. drlg.
M. A. K. Pet., No. 4 Harbor, Wilmington, Los Angeles	35- 4-13	3,443	completing
Morton & Elder, No. 2 Harbor, Wilmington, L. A.	35- 4-13	3,465	flow 274 b.d.
San Rey Oil, No. 1 Horn, Wilmington, Los Angeles	32- 4-13	1,788	sd. sh. drlg.
Union Pacific R. R., No. 114, Wilmington, Los Ang.	3- 5-13	2,288	sd. sh. drlg.
Cal-Pico Oil, No. 1 Durfee, Pico, Los Angeles	7- 2-11	1,640	sd. sh. drlg.
Kern Oil, No. 42 Monterey, Montebello, Los Angeles	2- 2-12	7,870	completing
Texas Co., No. 6 Mulholland, Montebello, Los Angeles	2- 2-12	7,805	completing
Herley-Kelly, No. 1 Burke, Montebello, Los Angeles	2- 2-12	6,460	rig to pump
Standard Oil, No. 42 Bolsa, Huntington B., Orange	34- 5-11	3,630	O.S. drlg.
Security L. & W., No. 1 Security, La Habra, Orange	9- 3-10	2,792	sd. sh. drlg.
Morton, L. C., No. 1 Thomas, Anaheim, Orange	23- 4-10	3,997	sd. sh. drlg.

KEY TO ABBREVIATIONS USED IN DRILLING REPORTS

Abd., abandoned.
Acd., acidized.
B.O., barrels of oil.
B.P.D., barrels per day.
B.D., barrels daily.
B.P., back pressure.
B.R., building rig.
B. ck., bottom choke.
Br. sh., brown shale.
B.S., basic sediment.
C.&P., cellar and pits.
Cd. or Crd., cored.
C.D., correct depth.
Cg., coring.
Cmtd., cemented.
C.O., cleaning out.
Comp., completed.
Compr., compressor.
C.P., casing pressure, also cement through perforations.
Csg., casing.
D.D., drilling (or drilled) deeper.
Drlg., or Drg., drilling.
Drk. or Dk., derrick.
D.S., drill stem.
D.S.T., drill-stem test.
D.P., drill pipe.
D.&A., dry and abandoned.
Fsg., fishing.
Gbo., gumbo.
G.I., gas injection.
Gr., gravity.
Gr. sd., gray sand.
Grn. sh., green shale.
Hd. sd., hard sand.
H.F.W., hole full of water.
I.P., initial production.
L., lime.
Lnr., liner.
Loc., location.
M.I.M., moving in material.
M.I.R., moving in rig.
M.I.R.T., moving in rotary tools.
M.O.T., milling on tools.
O.I.H., oil in hole.
O.S., oil sand.
O.T.D., old total depth.
O.W.D.D., old well drilling deeper.
O.W.P.B., old well plugging back.
P.B., plugging back.
P.B.P., pulling or pulled big pipe.
P.L., pipe line.
P.L.O., pipe-line oil.
Pmpg., pumping.
P.O.P., putting on pump.
P.P., pulled pipe.
Rd. sd., red sand.
Rd. sh., red shale.
Recmt., recemented.
Recvd., recovered.
Rmg., reaming.
Redrlg., redrilling.
Rng., running.
R.O.G., rig on ground.
R.P., rock pressure.
R.U., rigging up.
R.U.R., rigging up rotary.
R.U.S.T., rigging up standard tools.
R.&T., rods and tubing.
S. or Sd., sand.
S.D., shut down.
Sdy. sh., sandy shale.
Sdtrk. or St., sidetracked.
S.D.P.L., shut down for pipe line.
S.D.O., or S.D.W.O., shut down awaiting orders.
S.G., show gas.
Sh.&L., shale and lime.
S.I., shut in.
S.I.P., shut in, prorated.
S.L.M., steel-line measurement.
S.O., show oil.
S.O.G.&W., show of oil, gas, and water.
Spdg. or Spd., spudding.
S.R., straightreaming.
Stdg., standardizing (also standing).
S.W., salt water.
Swbg., swabbing.
T.A., temporarily abandoned.
Tbg., tubing.
T.D., total depth.
T. ck., top choke.
T.P., tubing pressure.
Tr., tract.
Tstd., tested.
U.R., underreaming.
W.I.H., water in hole.
W.O., workover.
W.O.C. or W.O.C.S., waiting on cement to set.
W.O.O., waiting on orders.
W.P., working pressure.
W.S.O., water shutoff.
W.S.O.O.K., water shutoff O.K.
W.S.R. or W.O.S.R., awaiting standard rig.
Wtr., water.

OKLAHOMA

Week Ended July 13

NORTHERN OKLAHOMA

Creek County

D. E. Demsey's No. 1 Marrs, NE NW SE Sec. 29-18-8. Prue 2,445-52 ft., T.D. C.O. **Indo Oil Co.'s No. 1 Slick, NW NW NW** Sec. 1-16-9. S.O. 1,145-78 ft.; T.D. in Dtchr. 2,922 ft.; S. 5 B.O.P.D.

Garfield County

Champlin Ref. Co.'s No. 1 Kunkel, C E½ SE NW Sec. 23-23-6w. Lytn. 5,048 ft.; Miss. 6,070 ft.; T.D. 6,930 ft.; P.B. 6,-190 ft.; 250,000 cu. ft. gas and S.S.O.; acdz.

Garvin County

Roy Starr's No. 1 Shi, NW NE NE Sec. 8-4-3. S.O. 2,700 ft.; S.D. 3,115 ft.

Hughes County

Loual Drlg. Co.'s No. 1 Jackson, C SW NE Sec. 24-9-9. T.D. 3,303 ft.; W.O.C.

Kay County

Malarnee Oil Co.'s No. 1 Harris, C SW NE Sec. 14-25-1. Miss. 4,050 ft.; chat with S.O. 4,063-4,105 ft.; wtr. 4,433-40 ft., T.D.; P.B. 3,700 ft.; S. 25 B.O. and 50 B.W.; S.D.O.

Kingfisher County

Phillips Pet. Co.'s No. 1 Grape, C NW SE Sec. 30-18-5w. Layton 5,600 ft.; O.S.W. 4,146 ft.; Miss. 6,670 ft.; drlg. 7,400 ft.

Kiowa County

Gene Burke's No. 1 Morgansen, NW NW SW Sec. 6-2-16w. Drlg. 710 ft.
Tice Prod.'s No. 1 Fowler, SE SE NW Sec. 10-7-18w. Drlg. 1,520 ft.

Logan County

Eason Oil Co.'s No. 1 Wells, NE NW NE Sec. 15-16-2w. Lytn. 4,274 ft.; Ckbd. 4,-565 ft.; Miss. 5,409 ft.; Msnr. 5,515 ft.; S.S.O.&G.; Hntn. 5,527 ft.; T.D. 5,920 ft.; D.&A.

Muskogee County

Garrett's No. 1 Reinhart, SE cor. Sec. 15-13-17. Drlg. 300 ft.

Metzgas et al's No. 1 Springer, SE SE NW Sec. 12-13-17. Drlg. 410 ft.

Noble County

Helmerich & Payne's No. 1 Fireshaker, SE SE NE Sec. 11-24-3. Simp. 3,960 ft.; Wlx. 3,965 ft.; sd. and S.S.O. 3,983 ft.; Arb. 4,085 ft.; W.O.C.

Okfuskee County

Burke-Greis' No. 1 Dew, NE NE NE Sec. 9-12-9. Prue 1,810 ft.; drlg. 3,702 ft.
Reese Drlg.'s No. 1 Berryman, NW SW SW Sec. 36-11-8. Cg. 3,468 ft.
Texas Co.'s No. 1 Cowan, SW cor. Sec 5-11-10. Hntn. 3,646 ft.; 1st Wlx. 3,879 ft.; drlg. ahd.

Oklahoma County

Continental Oil Co.'s No. 1 Renund, SE SE NE Sec. 24-14-4w. Drlg. 4,930 ft.

Osage County

Mid-Continent Pet. Corp.'s No. 1 Osage, NW NW NE Sec. 18-24-5. Drlg. 3,665 ft.

Pawnee County

Benedum-Trees' No. 1 State, SW NW NW Sec. 13-21-6. Drlg. 1,024 ft.

Payne County

Burke-Greis' No. 1 Olson, C W½ E½ NW Sec. 26-19-5. Cg. 3,701 ft.
Elson et al's No. 1 Murphy, SE SE NE Sec. 29-19-2. Drlg. 3,135 ft.
H. & H. Oil Co.'s No. 1 Linsenmeyer, SE SE SW Sec. 3-18-4. Drlg. 2,370 ft.
Summit Drlg. Co.'s No. 1 Arnold, NW NE NW Sec. 8-19-2. T.D. 4,980 ft.; D. &A.

Pontotoc County

Crescent Oil Co.'s No. 2 Thompson, NE NW SW Sec. 29-3-4. Drlg. 991 ft.
Garrett's No. 1 Williams, NE cor. Sec. 28-2-4. S.D. 552 ft.
Kerlyn Oil Co.'s No. 1 Chism, NW SE SE Sec. 24-5-6. S.O. 1,940-70 ft.; T.D. 2,173 ft.; C.O. 2,000 ft.
Morgan et al's No. 1 Brown, SW SW SE Sec. 30-3-5. Vla. 523 ft.; S.S.O. 1,125 ft.; T.D. 1,435 ft.; H.F.W.; D.&A.
Ramsey Pet. Co.'s No. 1 McFarland, NE NE SE Sec. 2-4-7. Cg. 1,975 ft.

Pottawatomie County

Thompson Bros.' No. 1 L. Truesdale, SE SE NW Sec. 31-8-5. Earls. 3,486 ft.; Msnr. 4,119 ft.; Hntn. 4,121 ft.; Vla. 4,224 ft.; first Wlx. 4,349 ft.; S.S.O.; 2nd Wlx. 4,432 ft.; drld. out to 4,348 ft.; S. 54 B.W. and 9 B.O. in 19 hrs.; D.&A.

Seminole County

Davis et al's No. 1 Thlocco, NW SW NW Sec. 30-7-7. T.D. 2,274 ft.; W.O.C.

Washita County

Continental Oil Co.'s No. 1 School ld., C NE Sec. 16-8-16w. Drlg. 7,707 ft.

SOUTHERN OKLAHOMA

Atoka County

Kirksey's No. 1 Baskett, SW SE SE Sec 7-3s-10e. S.D. 845 ft.; fuel.
Thompson Bros.' No. 1 Richardson, NE SE SW Sec. 10-3s-9. Hntn. 1,230 ft.; S.O. 1,259 ft.; S.D. 1,500 ft.

Tillman County

Cline et al's No. 1 Staley, SE SE NW Sec. 10-2s-19w. Drlg. 5,380 ft.

LEGAL

U. S. Department of the Interior, General Land Office, Washington, D. C. Sale of oil and gas leases in Oklahoma. Notice is hereby given that leases of the oil and gas deposits in the following lands in the known geologic structure of the Red River oil field, Oklahoma, defined October 18, 1928, are offered to the responsible qualified bidder of the highest bonus per acre pursuant to the provisions of section 17 of the leasing act of February 15, 1920 (41 Stat. 437), as amended by the act of August 21, 1935 (49 Stat. 674), at the royalty rate scale in the lease form shown in Circular 1386, at a sale to be held in the office of the Geological Survey, Post Office Building, Ardmore, Oklahoma, at 10 o'clock A. M. on August 21, 1940: Unit No. 1: Beginning at a point in the river bed, South 61° 35' E., 117.40 chains from the Texas-Oklahoma Boundary Survey reference Monument, "North Range Line, 15/14," which is 45.4 links south of the corner of Secs. 1, 6, 7, and 12, T. 5 S., Rs. 14 and 15 W., Ind. Mer., Oklahoma, thence in the river bed, along the East boundary of the Lone Star (upper tract) south 17.50 chains, to the Texas-Oklahoma boundary and the S.E. corner of the Lone Star (upper tract); thence along the boundary North 40° 09' E., 3.60 chains, North 44° 06' E., 3.13 chains, to the West boundary of the Burke Divide Lease (middle lease); thence in the river bed, along the West boundary of the Burke Divide Lease (middle lease) North, 12.50 chains, to a point which is the N.E. corner of the Corts Drilling Company and a common corner to the Burke Divide Lease (middle lease); thence in river bed, along the South boundary of the Burke Divide Lease (middle lease) West, 4.50 chains, to place of beginning, containing 6.7 acres. Unit No. 2: Beginning at a point on the north line of the Sam Sparks Survey, South 49° 49' E., 104.63 chains from the Texas-Oklahoma Boundary Survey reference monument, "North Range Line 15/14," which is 45.4 links south of the corner of Secs. 1, 6, 7, and 12, T. 5 S., Rs. 14 and 15 W., Ind. Mer., Oklahoma, thence along the north line of the Sam Sparks Survey South 60° 04' W., 18.77 chains, South 76° 15' W., 4.00 chains, to east boundary of the Burke Divide upper permit; thence in river bed along the boundary of the Burke Divide upper permit, South 2.08 chains, East 20.15 chains, to the Southwest corner of the Burke Divide upper lease; thence in the river bed along the west boundary of the Burke Divide upper lease, North 12.40 chains to place of beginning, containing 13.5 acres. Unit No. 3: Beginning at the NW cor. of the Melish lower permit, Guthrie 014088. Thence N. 12° 30' W., 2.15 chains, more or less, to the medial line of Red River. Thence following the medial line, southwesterly, 28.20 chains, approximately, to the east bdy. of the Mutual lease. Thence along the east bdy. of the Mutual lease, S. 12° 30' E., 0.90 chains, more or less. Thence along the bdrs. of the Melish middle lease, N. 57° 30' E., 6.38 chains, N. 76° 30' E., 5.95 chains, S. 12° 30' E., 38.00 chains, more or less, to the Texas-Oklahoma Bdy. Thence along the said State bdy. line, easterly, 34.00 chains, more or less, to a point. Thence N. 8° 00' W., 1.00 chain, more or less, to the SE cor. of the Melish lower lease. Thence along the bdrs. of the Melish lower lease and permit, S. 76° 00' W., 19.78 chains, N. 12° 30' W., 40.00 chains, to the place of beginning, containing approximately 64 acres, subject to variation arising from changes in the position of the medial line and of the south bank of the river since December 31, 1923. Unit No. 4: Beginning at the SE cor. of the Melish lower lease, Guthrie 014088. Thence S. 8° 00' E., 1.00 chain, more or less, to the Texas-Oklahoma Bdy. Thence along the said bdy., northeasterly, 68.00 chains, more or less. Thence, west, 21.00 chains, more or less, to the east bdy. of the Patterson lease. Thence along the bdy. of the Patterson lease, south 10.00 chains, to the SE cor. of the Patterson lease, west 17.50 chains, to the SW cor. of the Patterson lease, north 22.80 chains, to the NW cor. of the Patterson permit. Thence north, 2.40 chains, more or less, to the medial line of Red River. Thence along the medial line, southwesterly, 46.00 chains, more or less, to the east bdy. of Unit No. 3. Thence S. 12° 30' E., 2.15 chains, more or less, to the NW cor. of the Melish lower permit. Thence along the bdrs. of the Melish lower permit and lease, N. 76° 00' E, 20.00 chains N. 52° 30' E., 3.45 chains, S. 8° 00' E., 41.55 chains, to the place of beginning, containing approximately 150 acres, subject to variation arising from changes in the position of the medial line and of the south bank of the river since December 31, 1923. Two or more units may be consolidated in a single lease to the same qualified bidder provided the acreage does not exceed the maximum prescribed by law. The successful bidder must deposit on the day of the sale a certified check on a solvent bank or cash for 1/5 of the amount of each bid and file the showing of qualifications to receive a lease, required by section 7 of General Land Office Circular 1386. The remaining 4/5, together with the annual rental in advance at the rate of $1 per acre must be paid, and a $5,000 corporate surety bond must be furnished prior to the issuance of the lease. The bidders are warned against violation of the provisions of section 59 of the United States Criminal Code approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids at the discretion of the Secretary of the Interior. Commissioner, General Land Office.

KANSAS

Week Ended July 13 (Descriptions are East unless marked otherwise)

Barber County

Finston's No. 1 Pichner, CEL NE SW Sec. 24-16-11w. Lans. 3,067 ft.; Arb. 3,376 ft.; T.D. 3,400 ft.; acd.; H.F.W.; D.&A.
Sinclair-Prairie Oil Co.'s No. 1 Binning, C S½ SE SW Sec. 26-32-13w. Tpka. 3,-045 ft.; Lans. 3,930 ft.; Miss. 4,430 ft.; Vla. 4,769 ft.; Simp. 4,857 ft.; Arb. 4,-975 ft.; cd. to 5,004 ft.; N.S.; T.D. 5,-083 ft.; W.O.C.

Barton County

Carlock et al's No. 1 Hammer, CNL NE NW Sec. 35-19-12w. Drlg. 1,020 ft.
Herndon Drlg.'s No. 1 Hitchmann, C E½ NE NW Sec. 1-17-12w. Lans. 3,108 ft.; Arb. 3,338 ft.; T.D. 3,390 ft.; D.&A.
Robertson's No. 1 Miller, CWL SW NE Sec. 4-16-14w. Drlg. 2,315 ft.

Butler County

Jocelyn et al's No. 1 Hall, CSL NE SW Sec. 7-29-7. S.D. 1,365 ft.
McDaniel's No. 1 Eckel, NW NE NW Sec. 7-27-7. Drlg. 295 ft.

Cowley County

McKnab's No. 1 Lemert, CWL NW SE Sec. 11-34-4. Miss. 3,078 ft.; Arb. 3,-568-89 ft., T.D.; H.F.W.; to P.B.
McKnab's No. 1 McKown, NE NE SW Sec. 31-33-5. Drlg. 1,772 ft.
Stewart et al's No. 1-A Ehmke, C W½ NW NW Sec. 14-32-3. Arb. 3,457 ft.; T.D. 3,460 ft.; D.&A.
Trees Oil's No. 1 Orr, NW NE NW Sec. 17-30-4. Drlg. 3,050 ft.

Douglas County

Forrester et al's No. 1 Altenbernd, CSL NW Sec. 35-12-20. Drlg. 1,074 ft.
Forrester et al's No. 1 Ice, SW SW SE Sec. 9-14-19. Drlg. 340 ft.

Ellis County

Gulf Oil Corp.'s No. 1 Arnhold, C N½ NE SE Sec. 36-13-17w. Drlg. 3,025 ft.

Ellsworth County

Billings' No. 1 Vanek, SW SW SE Sec. 25-14-10w. Drlg. 340 ft.
Emerich et al's No. 1 Hagy, C W½ SW NE Sec. 20-16-10w. Lans. 3,020 ft.; Arb. 3,326 ft.; T.D. 3,349 ft.; I.P. 240 B.O.; comp.

Greenwood County

Rex & Morris' No. 1 Jahren, NW NE SE Sec. 29-25-8. Drlg. 1,665 ft.

Jefferson County

McLaughlin's No. 1 Frazier, C SW NE Sec. 22-9-18. Drlg. 250 ft.

Johnson County

McCain et al's No. 1 Doan, CEL NW SE Sec. 34-12-22. S.D. 1,535 ft.

Kearny County

Stanolind O. & G. Co.'s No. 1 Judd, C SE SE Sec. 15-21-38w. Drlg. 4,643 ft.

McPherson County

Broadwater, Inc.'s No. 1 Heaton, C E½ SE SE Sec. 28-17-1w. Tpka. 1,558 ft.; drlg. 2,820 ft.
Imo O. & G.'s No. 1-A Eveleigh, CEL SW NE Sec. 3-18-4w. Drlg. 2,100 ft.

Phillips County

Cities Service's No. 1 Ray, NE NW SE Sec. 32-5-20w. T.D. 3,603 ft. in Arb.; S.O.

Pratt County

Cities Service's No. 1 Lehrling, NE SW SW Sec. 19-27-11w. Drlg. 615 ft.
Herndon Drlg.'s No. 1 Montgomery, CEL SW Sec. 13-27-13w. Drlg. 2,010 ft.

Rice County

Republic Nat. Gas' No. 1 Bean, C E½ NE SW Sec. 23-19-6w. Miss. 3,239 ft.; some sat.; Miss. 3,272 ft.; T.D. 3,299 ft.; D.&A.

Rooks County

Mitchell Drlg. Co.'s No. 1 Vererka, CSL SE SE Sec. 21-8-19w. Tpka. 2,783 ft; Lans. 3,174 ft.; S.S.O. 3,333 ft.; Arb. 3,428 ft.; S.O. 3,435 ft., T.D.
Wakefield et al's No. 1 Diehle, C N½ NW NW Sec. 4-9-17w. Tpka. 2,885 ft.; Lans. 3,140 ft.; T.D. 3,365 ft.; S.O.

Russell County

Gussman's No. 1 Mudd, CWL NW NE Sec. 16-15-15w. Lans. 3,038 ft.; C.O. 3,-259 ft.
Jones Bros.' No. 1 Mahoney, CSL SW SW Sec. 8-14-12w. Tpka. 2,614 ft.; Lans. 2,943 ft.; T.D. 2,984 ft.; P. 186 B.O. in 8 hrs.; I.P. 559 B.O.; comp.
Pryor & Lockhart's No. 1 Davidson, C E½ NE NW Sec. 12-15-11w. U.R. 1,955 ft.

Sedgwick County

G. A. Fuller's No. 1 Stitt, CSL SE NE Sec. 21-27-1w. K.C. 2,652-2,806 ft., T.D.; P. 24 B.O.P.D.

Stafford County

Stanolind's No. 1 Ahnert, C W½ SE NE Sec. 10-22-12w. Lans. 3,270 ft.; Lans. 3,470 ft.; Arb. 3,633 ft.
Stanolind's No. 1 Roscoe, C N½ NE SE Sec. 15-24-12w. Tpka. 3,010 ft.; Lans. 3,470 ft.; S.O.; cg. 3,632 ft.

ARKANSAS

Columbia County

Barnsdall Oil Co.'s No. 1 El Dorado & Wesson R. R. Co., C NW SW Sec. 5-19-18. Set 10¾-in. csg. 2,525 ft.; reported S.S.O. 7,855-65 ft.; tstd. S.W. 8,695-8,715 ft.; arng. dpn. 8,715 ft.
Berkshire Oil Co.'s No. 1 H. C. Couch, C N 30-ac., SE SE Sec. 22-17-20. R.U.
McAlester Fuel Co.'s No. 1 K. J. Sayers, C NW NE Sec. 15-18-22. R.U.
Mid-Continent Pet. Corp.'s No. 1 J. Keith, C SW NW Sec. 16-18-22. Set 16-in. csg. 397 ft.; set 9⅝-in. csg. 4,144 ft.; T.D. 8,913 ft.
Standard Oil Co. of La.'s No. 3-B Longino, 660 ft. W, 560 ft. S, NE cor. SW SE Sec. 18-17-19. Set 9⅝-in. csg. 3,957 ft. set 6-in. csg. 7,567 ft.; T.D. 7,583 ft.
Tide Water Asso. Oil Co.'s No. 1 E. M. Hutcheson, 330 ft. S, 1,320 ft. NE cor. SE Sec. 16-18-19. Set 9⅝-in. csg. 2,-525 ft.; drlg. rd.&gr. sh. 5,852 ft.

Lafayette County

J. & J. Oil Co.'s No. 1 J. E. Barnes, 345 ft. W, 615 ft. N, SE cor. Sec. 4-16-24. Set 10¾-in. csg. 218 ft.; T.D. (cor.) 2,160 ft.; wshg. to bttm.

Lonoke County

Lunnon Howell & Ford's No. 1 City of Cabot, C NE Lot 1, Blk. 6, Sec. 18-4n-9w. Set 4¾-in. csg. 878 ft.; sd. reported S.O. 1,273 ft.

Miller County

Standard Oil Co. of La.'s No. 2 W. P. Sturgis, 330 ft. SE cor. NE SW Sec. 1-17s-27w. Acd. 3,570-74 ft.; rng. electrical survey 4,055 ft.

Nevada County

Berry Asphalt Co.'s No. 1 W. E. Meadows, Sec. 4-14-20. R.U.

Ouachita County

Sam Richardson & Co., Inc.'s No. 2 B. Goodwin, NE cor. SW SW Sec. 32-15-15. Set 10-in. csg. 156 ft.; set 7-in. csg. 2,762 ft.; W.O.C. 3,210 ft.

Saline County

Tedford Drlg. Co. et al's No. 1 Cunningham, C SW NE Sec. 31-3s-15w. Set 12½-in. 75 ft.; set 10-in. csg. 285 ft.
Tedford Drlg. Co.'s No. 1 Williams, 1,295 ft. SE of No. 1, Sec. 31-3s-15w. Set 12½-in. csg. 62 ft.; drlg. sd.&sh. 215 ft.

Union County

Chas. Travis et al's (formerly Barnsdall Oil Co.'s) No. 1 North Central Texas, 272 ft. S, 327 ft. E, NW cor. Sec. 5-18-14. O.W.D.D.; O.T.D. 3,838 ft.; R.U. to dpn.
J. H. Coker and J. P. Grieves et al's No. 1 C. L. Smith, 320 ft. SW cor. NE NW Sec. 32-17-14. Set 10¾-in. csg. 225 ft.; cd. 3,491-3,501 ft.; rec. 1 ft. hd. sh., 2 ft. soft sh., 1 ft. volc. ash, 3½ ft. sdy.

ash, strks. sh., good stain and odor; D.S.T. 3,453-3,501 ft.; seat failed; fsg. 540 ft.; D.S. at 2,300 ft.; O.T.D. 3,541 ft.

Fohs Oil Co.'s No. 1-A Grace, 660 ft. N, 330 ft. W, SE cor. SW SE Sec. 31-17-14. Sqzd. perf. 2,732-38 ft. and reperf. 2,732-37 ft. and tstd. 90 ft. oil and 2,200 ft. brksh. wtr.; sqzd.; drld. out to 3,700 ft.; perf. 3,687-97 ft.; jetting with gas; est. 5 B.O.P.H.; pmpg.; no ga.

Fohs Oil Co.'s No. 2 C. T. Grace, 330 ft NW cor. SW SE Sec. 31-17-14. Set 7-in. csg. 3,120 ft.; W.O.C. 3,122 ft.

McCressien Oil Co.'s No. 3 A. Hadley, 250 ft. N, 200 ft. W, SE cor. NE SW Sec. 3-18-13. R.U.

Sam Sebersky's No. 1-B G. N. Jerry, C SW SW Sec. 21-17-14. Drlg. 2,089 ft.

Standard Oil Co. of La.'s No. 1 D. A. Zimmerman, 660 ft. SE cor. SE SE Sec. 29-18s-16w. T.D. 7,855 ft.; P.B. 7,-250-7,540 ft. U.R. 7,316-24 ft.; to test.

LOUISIANA

NORTH LOUISIANA

Bienville Parish

Ark.-La. Gas Co.'s No. 1-C Thomas, 710 ft N, 1,273 ft. E, SW cor. NW Sec. 24-16-10. Set 9⅝-in. csg. 1,229 ft.; cg. 5,-317 ft.

Union Prod. Co.'s No. 1 Havis Unit, 150 ft. N and W of SE line NW NW Sec 11-16-10. Set 9⅝-in. csg. 1,326 ft.; drlg. L.&sh. 3,623 ft.

Bossier Parish

L. K. McGriffin's No. 1 Tomlinson, 990 ft. S, 600 ft. E, C Sec. 16-18-11. Set 10-in. set. 40 ft.; drlg. sh. 727 ft.

R. L. Reese et al's No. 1 Bellevue Ld. Co., 170 ft. E, 365 ft. N, C Sec. 27-20-11. Set 10-in. csg. 100 ft.; reported S. O. in Tokio 2,672-88 ft.; D.S.T. 2,665-2,705 ft.; dry; cg. 2,793 ft.

T. G. Shaw, Tr.'s No. 1 Mehaffey, Sec. 27-19-11. Drlg. L.&sh. 2,552 ft.

Triangle Drlg. Co.'s No. 8-C Skannal, C NE NE Sec. 13-17-12. Drlg. sh. 3,028 ft.

Caddo Parish

Chastain & Meier's No. 1 Crystal fee, Sec. 24-21-16. Set 8-in. csg. 1,001 ft.; W.O.C.; tstd. S.O. 1,007 ft.; W.O.S.R. 1,012 ft.

J. M. Conner's No. 1-A Williams, 334 ft. N, 986 ft. W, SE cor. NE Sec. 3-15-15. Set 10¾-in. csg. 400 ft.; S.G. 4,980-5,027 ft., 5,050-96 ft., and 5,120-38 ft.; W.O. 5,138 ft.

R. B. Creager's No. 1-A Muslow, Sec. 31-21-15. Set 7-in. csg. 1,430 ft.; W.O.S.R. 1,569 ft.

C. W. Crockett's No. 1 Tobin et al, Sec. 11-20-16. Set 10-in. csg. 21 ft.; W.O.C.

Davis & Hart's No. 1-A Muslow, Sec. 9-20-15. Set 10-in. csg. 60 ft.; set 7-in. csg. 1,303 ft.; S.D. 1,503 ft.; high wtr.

L. Halbfass' No. 1-B Knight Oil & Ld. Co. Sec. 1-21-16. Set 10-in. csg. 60 ft.; T.D. 2,381 ft.; P.B. 1,040 ft.; set 6-in. csg. 990 ft.; W.O.C.

F. G. Holcomb's No. 1 Sims, Sec. 3-20-16. Set 6⅝-in. csg. 1,004 ft.; tstd. S.W.; S.D. 1,007 ft.; W.O.

R. B. Hollandsworth's No. 1 Sentell, 1,-650 ft. N, 660 ft. E, SW cor. Sec. 35-20-14. S.D. 80 ft.

Morris Co.'s No. 1 Caddo O. & M. Co., Sec. 12-20-16. R.U.

G. H. Neighbors' No. 1 Richardson, Sec. 36-21-16. Set 6⅝-in. csg. 1,335 ft.; T.D. 1,575 ft.; acd.; tstd. dry 1,575-1,640 ft.; W.O.

E. A. Stiller et al's No. 4 Stiles, Sec. 28-21-16. Tstg. 2,386 ft.

L. L. Sugar's No. 1-A Muslow, Sec. 31-21-15. Set 7-in. csg. 1,380 ft.; W.O.C. 1,400 ft.

L. L. Sugar's No. 2-B Muslow, Sec. 32-21-15. Set 6-in. csg. 1,375 ft.; W.O.S.R. 1,558 ft.

Texas Co.'s No. 24-B Noel, Sec. 14-21-15. Drlg. sh. 1,126 ft.

Thomas & Mack's No. 2 Burton, Sec. 1-20-16. R.U.

G. A. White's No. 1 Muslow, Sec. 31-21-15. Set 10-in. csg. 40 ft.; 7-in. csg. 1,-405 ft.; T.D. 1,550 ft.; S.D.; high wtr.

Catahoula Parish

H. L. Hunt's No. 1-A La. Central, C SW SW Sec. 26-10-6e. Drlg. 57 ft.

Claiborne Parish

Ohio Oil Co.'s No. 15 G. W. Taylor Acct. 1, 100 ft. S and W, C SE Sec. 15-23-8. Drlg. sh. 7,308 ft.

Union Producing Co.'s No. 1-A T. D. Meadows et al, C NE Sec. 18-21-4. R.U.

Franklin Parish

J. B. White et al's No. 1 Dalley, 1,170 ft. N, 2,490 ft. W, SE cor. Sec. 1-11-6e. S.D. 3,016 ft.

La Salle Parish

Ark. Fuel Oil Co.'s No. 1 Gandy unit, 606 ft. N, 662 ft. E, SW cor. SE Sec. 12-10-2e. Set 10¾-in. csg. 192 ft.; gas sd. 2,208-14 ft.; oil sd. 2,217-26 ft. and 2,233-41 ft.; set 7-in. csg. 2,256 ft.; perf. 2,234-47 ft.; tstd. est. 5,000,000 cu. ft. gas; sqzd. off and W.O.C. 2,256 ft.

Peterson Pet. Corp.'s No. 1 Tremont Lbr. Co., C NE SW Sec. 25-9-2e. Set 10¾-in. csg. 140 ft.; cg. sh.&sd. 3,310 ft.

Placid Oil Co.'s No. 7 Goodpine, C SE SW Sec. 18-10-3e. Drlg. sh. 1,875 ft.

Placid Oil Co.'s No. 19 La. Central, C NE NW Sec. 36-10n-2e. Set 10¾-in. csg. 100 ft.; tstd. mud and oil 2,230-48 ft.; gas sds. 2,298-2,329 ft., 2,755-64 ft. and 2,814-28 ft.; oil sds. 2,764-78 ft. and 2,-784-88 ft.; blew out; ran wild; controlled with blowout preventer.

Morehouse Parish

Southern Carbon Co.'s No. 32 Tensas, Sec. 28-22-4e. Set 6-in. csg. 2,122 ft.

Ouachita Parish

Interstate Nat. Gas Co.'s No. 98 fee, Sec. 44-19-3e. Set 6-in. csg. 2,138 ft.

Sabine Parish

Major Oil Co.'s No. 1 Laroux, 330 ft. NE cor. SE NE Sec. 36-8-13. Set 7-in. csg. 2,215 ft.; T.D. 2,630 ft.; tstd. S.O.; acd.; W.O.S.R.

Shell Oil Co., Inc.'s No. 1 Pickering Lbr. Co., C NE SW Sec. 30-4-12. Drlg. sh. 750 ft.

Union Parish

N. & W. Corp.'s No. 1 Holloway, Sec. 21-21-3e. Set 8-in. csg. 751 ft.

Webster Parish

W. C. Feazel's No. 1 Tillman, 1,320 ft. NW cor. NE Sec. 11-17-9. Set 9⅝-in. csg. 2,190 ft.; drlg. 4,896 ft.

Hunt Oil Co.'s No. 7 Bodcaw, 100 ft. SW cor. NE SE Sec. 15-21-10. R.U.

Hunt Oil Co.'s No. 2 Scott, 1,980 ft. N. 50 ft. E, SW cor. Sec. 20-21-9. Set 13⅜-in. csg. 610 ft.; drlg. sh.&sd. 7,736 ft.

Midstates Oil Corp.'s No. 1 Giddens unit, 282 ft. N and W. C SW NE Sec. 30-21-9. Set 9⅝-in. csg. 5,620 ft.; drlg. 7,-112 ft.

Calhoun County

Coronado Corp.'s No. 1 K. Welder, Hidalgo Sur., 3 mi. SE Seadrift. "Tight well"; reported to be tstg.; 5½-in. csg 9,750 ft.; perf. csg. 8,473-84 ft.; swbd. S.W.; perf. csg. 5,654-55 ft. and 5,658-59 ft.; well sanded up; C.O.

Duval County

Forest Dev. Corp.'s No. 1 Rogers, J. Poitevent Sur. 275. T.D. 4,307 ft.; 5½-in. csg. 4,307 ft.; perf. csg. 4,303-06 ft.; flwg. gas and dist.

Henderson Coquat's No. 1-B Southland Life Ins. Co., Santos Flores gr. T.D. 5,640 ft.; abd.

Providence Oil Corp.'s No. 1 C. Driscoll, I.&G.N. Sur., Sec. 138. Drlg. 3,902 ft.

Goliad County

J. K. Culton's No. 1 S. E. Cole, Goliad Town Tr. Drlg. sh. 4,115 ft.

Jim Hogg County

Patel Drillers, Inc., et al's No. 1 Gutierez, E. C. Barton Sur. 579. T.D. 3,-156 ft.; run 5-in. csg.

Jim Wells County

Henshaw Bros.' No. 1 L. L. Allen, Casa Blanca Sur. 10¾-in. csg. 648 ft.; T.D. 5,232 ft.; abd.

La Salle County

H. R. Cullen's No. 1 A. L. Washburn, H. &G.N. Sur. 67. Rec. 150 ft. gas-cut mud; S.O.; D.S.T. 4,740-4,805 ft.; S.D. 7,610 ft.

H. R. Cullen's No. 1 Wildenthal, J. McMullen & J. McGloin Sur., Blk. 69. R.U.

Lee County

Fred Pederson et al's No. 1 Brown, David Hudson Sur. T. Glen Rose L. 6,000 ft. 5½-in. lnr. cmtd. 8,201 ft.; drlg. L. 8,586 ft.

McMullen County

H. F. Baker's No. 1 Galloway, G. R. Galloway Sur. 34. Drlg. sh. 1,560 ft.

Cities Service Oil Co.'s No. 2 Rhode, L. W. Snowden Sur. 20. Drlg. 1,610 ft.

McCormick-King Prod. Co.'s No. 1 Shiner, Jose Alderete Sur. 14. Drlg. 1,210 ft.

Nueces County

Humble O. & R. Co.'s No. 1-B State, Tr. 706. 16-in. csg. 134 ft.; drlg. sh. 3,000 ft.

Richardson Pet. Co.'s No. 1 Boy Scouts of America, M. L. De Herrera gr. (Robstown field). T.D. 6,869 ft.; 5½-in. csg. 6,692 ft.

S. E. W. Oil Co.'s No. 1 Fred Talley, Sec. 10, Paul subd., Driscoll ranch. T.D. 3,916 ft.

Fred W. Shield's No. 1 J. O. Moore, De Lores I.&A. Sur., Sec. 143. 10¾-in. csg. 766 ft.; drlg. 5,726 ft.

Stanolind O. & G. Co.'s No. 1 State C. M. Blucher Sur., Tr. 746, 1¼ mi. S of E. White Point field. Drlg. 2,610 ft.

Texas Conservative Oil Co.'s No. 1 Isensee, Gregorio Farias Sur. S.D. 6,510 ft.

San Patricio County

W. S. Boyle and R. Wimberly's No. 1 R. L. Hodges. S.D. 6,000 ft.

Victoria County

Colton & Colton's No. 1 Terrell, J. B. Sideck Sur. T.D. 5,285 ft.; 7-in. csg. perf. 5,289-92 ft.; swbg. S.W.

WEST TEXAS WILDCATS

(Northern District)

Andrews County

Atlantic Refg. Co.'s No. 1-2 University, Sec. 2, Blk. 11, Univ. Lds. Sur. Swbg. 70 B.O.P.H. from 4,260-4,500 ft., after shot.

Atlantic Refg. Co.'s No. 1-23 University, Sec. 23, Blk. 11, Univ. Lds. Sur. Swbg. 55 B.O.P.H. after shot and acd. from 4,248-4,470 ft.

Texas Pacific Coal & Oil Co.'s No. 1-A Midland farms, NE NW Sec. 1, Blk. 40, Twp. 1n, T.&P. Survey, 5,000-ft. test. Drlg. 1,375 ft.

Cochran County

Texas Co.'s No. 1-F Mallett Land & Cattle Co., SW cor. Labor 25, Lge. 51, Scurry C.S.L. Sur. Swbg. and flwg. 113 B.O. in 13 hrs.; after acid, at T.D. at 5,059 ft.

Gaines County

Richmond Drlg. Co. et al's No. 1 G. R. Brumley, NE NE Sec. 17, Blk. 12-A, P.S.L. Sur. T.D. 4,664 ft.; S.S.O.; tstg. wtr. S.O. at P.B. depth 4,660 ft.

Howard County

C. T. McLaughlin's No. 1 Pete Johnson, NE NE Sec. 34, Blk. 32, Twp. 1n, T. &P. Sur. Drlg. 3,295 ft.

M. L. Richards' No. 1 Thelma J. Cole, SE NW Sec. 12, Blk. 28, H.&T.C. Sur. 3,500-ft. test. Drlg. 1,925 ft.

Yoakum County

Amerada Pet. Corp.'s No. 1 A. M. Brownfield, NE SW Sec. 620, Blk. D, Gibson Sur.; 5,500-ft. test. T.D. 5,769 ft.; sul. wtr.; S.D.O.

TEXAS

Week Ended July 13

GULF COAST WILDCATS

Brazoria County

Glenn McCarthy's No. 1 W. B. Munson, Samuel Carter Sur. T.D. 11,860; 5½-in. csg. 11,840 ft.; stk. tbg.; fsg.

Colorado County

Shell Oil Co., Inc.'s No. 1 R. H. Goodrich, H. Heller Sur. T.D. 8,145 ft.; rec. 470 ft. P.L.O.; D.S.T. 8,126-45 ft.; run csg.

Hardin County

Jack Frazier et al's No. 1 Nona Mills, S. B. Turner Sur. T. Cockfield 7,111-40 ft.; T.D. 7,215 ft.; rmg.

Harris County

J. W. Frazier et al's No. 1 Mrs. Theone Killerman Johnson et al, Whitney Britton Sur. 10¾-in. csg. 1,241 ft.

Jackson County

W. S. Boyle's No. 1 Beenview Dev. Co., V. Garcia Sur., Blk. 25. T.D. 6,002 ft.

John Mayo and Kirkpatrick Drlg. Co.'s No. 1 J. H. Tucker, R. Musquez Sur. 10¾-in. csg. 505 ft.; T.D. 6,505 ft.; abd.

Matagorda County

Texas Co.'s No. 2 R. V. Taylor, F. George Sur. Drlg. sh. 9,655 ft.

Montgomery County

David B. MacDaniel's No. 1 Hattie O. Baldwin, Walker Co. Sch. Ld. Sur. 10¾-in. csg. 1,230 ft.; T.D. 9,741 ft.; 5½-in. csg. on bttm.; perf. csg. est. 9,300-9,400 ft.; reperf. csg. 9,392-9,425 ft.; S.D.

Walker County

E. J. Dupree's No. 2 Thompson, M. Milsap Sur. T.D. 3,207 ft.; 5½-in. csg. 2,900 ft. swbd. S.W. 2,916-26 ft.

S. W. TEXAS WILDCATS

Brooks County

Sun Oil Co.'s No. 1-A Charles Boedecker, Sec. 16, C.C.S.D.&R.G.N.G. Sur. Drlg. sh. 2,287 ft.

West Prod. Co.'s No. 1 J. D. Cage, G.C.& S.F. Sur. 31. Drlg. sh. 6,171 ft.

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Patterson-Ballagh ...PIPE WIPERS

Mississippi and Southeast

By GEORGE WEBER

JACKSON, Miss., July 15.—Wildcatting picked up over the past week end, after rains had kept new activity down for several days. Yazoo County continued the most active sector, with new interest in the northwest part of the Tinsley field, due to new sands, and the probability of new exploration to the northwest of the field as now defined. Pickens, Mississippi's other new pool on the eastern edge of Yazoo County, will be tested in two new tests southeast and west of production. Of the wildcat counties, Montgomery County looms important with two tests staked.

Yazoo Activity

Yazoo County has had the largest bulk of drilling in the state, both regarding wildcatting and field activity, since it contains the state's only commercial oil pools. Recent developments indicate that Tinsley, the first discovery, may take on added importance with the discovery of further oil-producing sands in the northwest sector. This development has incited an active leasing play to the northwest of the field, and wildcatting is expected to follow shortly. The first such location, F. E. Smith, 1 School Land, 16-11n-3w, is located about 4 miles northwest of the field.

Elsewhere in the county new locations are staked for further wildcat tests. E. M. DcLoach will drill in 6-12n-1w, about 15 miles northwest of Pickens and the same distance northeast of Tinsley. Other wildcat activity is believed imminent northeast of the DeLoach test. About 18 miles east of Tinsley, Kingwood Oil Co. is beginning No. 1 Shipp, near the town of Benton.

Tinsley

The five important tests at Tinsley, of which one was completed and gaged during the past week, are centers of much attention this week. The remaining four wells are being completed, although gages are not yet available. The three sands, Woodruff, Lammons and Stevens, seem well defined as separate horizons, but the so-called Perry and Slick sands cannot be definitely named as new pays, since they are associated with the Stevens group by some geologists. The faulting at Tinsley makes it difficult to correlate sands, and the similar characteristics of the Stevens, Perry and Slick sands further leads to the belief that they may belong to the same group.

The most interesting of the five tests, Union Producing, 4 Twiner, is squeezing perforations after testing salt water and oil in the Lammons sand. After testing 2,390 ft. of oil in a 10-minute test at 5,459-79 ft. last week, the operators followed with another test at 5,459-5,529 ft. which showed 2,850 ft. of oil, 90 ft. of mud and 770 ft. of salt water in 15 minutes. A string of 7-in. casing was run to 5,542 ft. and perforated at 5,469-99 ft. Upon swabbing in, the well flowed about 65 per cent salt water, and perforations were squeezed for another production attempt.

Wildcats Dry

Wildcat abandonments during the past week included the Leon Dunn, 1 Pepper, a northwest outpost to the Pickens field in Yazoo County. The well was drilled "tight" and junked at 4,943 ft. with a Schlumberger tool stuck in the hole. Oktibbeha County's only current test, Oktibbeha Oil & Gas, 1 L. L. Murphy, was abandoned at 4,024 ft. after encountering a cavern. Loss of returns prevented operators from coring further, or taking an electrical survey. The test is not believed to have reached the Mississippian.

MISSISSIPPI COMPLETIONS

Wildcat—Oktibbeha County

Oktibbeha, 1 Murphy, NE NE NW 28-17n-12e, dry, 4,024 ft.

Wildcat—Yazoo County

Leon Dunn, 1 H. H. Pepper, 1,024 ft. E, 330 ft. S of NW cor. 26-12n-2e, dry, 4,943 ft.

Tinsley—Yazoo County

Union Producing, 2 Partridge, NW SE cor. 1-10-3, 320 bbl., tubing pressure 90 lb., total depth 5,408 ft.

Crude Movements

Tinsley crude will soon move to Vicksburg, where a 3,500-bbl. refinery erected by E. C. Johnston will go on stream late this month. This will add to the field's outlet, which has been further prorated by purchasers, with an average of 6,150 bbl. daily being produced from 62 wells and moved by tank car to Baton Rouge, La., and Mobile, Ala. Crude from the Pickens field is being shipped by rail to Good Hope, a coastal Louisiana deep-water terminal.

Geophysical activity continued sustained during the past week, excepting for inclement weather, with about 72 crews active in Mississippi and western Alabama.

MISSISSIPPI

Holmes County

L. A. Hawkins' No. 1 B. W. Humphrey, 1,980 ft. S, 330 ft. W NE cor. Sec. 33-13n-2e. Drlg. bl. sh. 4,018 ft.

Jefferson Davis County

J. W. Richardson's No. 1 M. Berry, C SW NE Sec. 15-9n-19w. Drlg. 3,017 ft.

Kemper County

R. E. Manning's (Crabb et al) No. 1 W. T. Caldwell, NW SE Sec. 25-9n-15w. 10¾-in. csg. 86 ft.; set 6-in. csg. 1,320 ft.; S.D. 3,265 ft., high wtr.

Madison County

Ralph A. Johnston's No. 1 J. W. Locke School Land, NE NE Sec. 16-11n-3e. R.U.

Stanolind Oil & Gas Co.'s No. 1 Higgason, C W½ SW Sec. 10-11n-5e. R.U.

Montgomery County

Gulf Ref. Co.'s No. 1 Fred Parker, SE SW Sec. 22-19n-7e. M.I.M.

E. R. Henderson's No. 1 Columbian Mutual Life Ins. Co., Sec. 36-21-5e. Set 10¾-in. csg. 250 ft.; W.O.C.

Neshoba County

J. P. Evans' No. 1 Mary Oliver, C SW Sec. 18-9n-13e. M.I.M.

Perry County

Fohs Oil Co.'s No. 1 Bond Lbr. Co., 907.5 ft. N, 660 ft. W, C Sec. 17-1s-11w. Set 10¾-in. csg. 1,651 ft.; W.O.C.

Scott County

E. L. Martin's No. 1 Newell Mineral Lse. Co., 660 ft. W, 330 ft. S, NE cor. Sec. 5-6n-7e. Set 9⅝-in. csg. 803 ft.; drlg. 1,516 ft.

Smith County

Haynes B. Owenby Drlg. Co.'s No. 1 State, C SE NE Sec. 6-2n-9e. Set 10¾-in. csg. 510 ft.; no report.

Yazoo County

Edward DeLoach's No. 1 Wilburn, Sec. 6-12n-3w. Loc.

Exchange Oil Co.'s No. 5 Wilburn, 440 ft. S, 220 ft. E, NW cor. Sec. 31-12n-3e. M.I.M.

Hassie Hunt's No. 1-B Lammons, C SW NE Sec. 1-10-3. Woodruff sd. 4,854-67 ft.; Stevens sd. 5,433-60 ft.; perf. 4,848-78 ft. and 5,446-62 ft.; swbg. in.

Hassie Hunt's No. 2-B Lammons, C NE NE Sec. 1-10-3. Drlg. 4,820 ft.

E. C. Johnston's No. 4 Brumfield, Sec. 2-10-3. T. Woodruff sd. 4,824 ft.; perf. csg. 4,000-12 ft.; washing.

Kingwood Oil Co.'s No. 1 P. P. Shipp, 440 ft. W, 1,320 ft. S, NE cor. SW Sec. 4-10n-1e. M.I.M.

Slick-Urschel Oil Co.'s No. 3 T. B. Slick, 330 ft. N, 660 ft. W, SE cor. Sec. 11-10-3. Woodruff sd. 4,490-4,535 ft.; washing in.

C. L. Thompson, Rowan & Hope's No. 1 Joe Elliott-Mrs. Mary Edwards, 900 ft. S. 2,310 ft. W of NE cor. Sec. 30-10n-3w. No report.

Union Prod. Co.'s No. 3 Cesana, 549 ft. N, 1,933 ft. E, SW cor. Sec. 18-10-2. M.I. rig.

Union Prod. Co.'s No. 4 J. M. Twiner, C NE NW Sec. 1-10-3. Set 10¾-in. csg. 593 ft.; D.S.T. 4,832-96 ft.; rec. 200 ft. oil and 150 ft. oil and mud in Woodruff sd.; D.S.T. Lammons sd. 5,459-79 ft. rec. 2,390 ft. oil and 125 ft. drlg. fluid in 10 min.; W.P. 26 lb.; B.H.P. 560 lb.; killed and sqzd.; perf. at 5,468-80 ft.; prep. resqueeze.

ALABAMA

Fayette County

B. L. Fillingame's No. 1 Alabama Educational Ass'n., NW SW Sec. 3-16s-12w. M.I.M.

Lawrence County

Mid-Southern Pet. Co.'s No. 1 Jackson, NE NE Sec. 30-7s-6w. Set surf. csg.; drlg. 1,106 ft.

Marion County

Seaboard Oil Co.'s No. 1 Clark et al., 360 ft. W, 660 ft. N, SE cor. SE SW Sec. 28-11s-14w. Shot 638-45 ft. with 130 qt. nitroglycerin; crooked hole; skdd. over; drlg. L. 1,227 ft.

Mobile County

Plains Prod. Co.'s No. 1 Daly-Hardman, NW cor. SE SE Sec. 2-6s-4w. Drlg. sh. 4,567 ft.

Canadian Fields

By VICTOR LAURISTON

CHATHAM, Ont., July 15.—On the Brazeau structure in the northern foothills west of Edmonton, Home Oil, 1, LSD 16, 7-43-17w5, suspended drilling at 8,713 ft. after crossing a fault around 8,700 ft., when the well returned to the Blairmore formation from the Fernie shales, which normally overlie the Madison. The 4¾-in. casing is being run to bottom, and tests will be made of several shows in the upper horizons. Results of these tests will determine whether or not a second well will be drilled.

Turner Valley Completions

In 34-20-3w5, North Turner Valley, Alberta Oil Incomes, 1, LSD 4, finished in the black lime at 6,974 ft., 634 ft. in the Madison, filled 2,000 bbl. of storage in less than 48 hours without acid treatment. Line has been laid to handle production, and the well is acidizing and testing, with indications of a major producer.

In 15-20-3w5, Anglo-Phillips, 1, LSD 14, finished at 9,058 ft. and later cemented back to shut off water from the lower lime, has finished milling tubing at 8,760 ft. and is acidizing and testing the upper lime.

In 6-19-2w5, Kamalta Oils, 1, LSD 1, finished at 8,128 ft. with 200 bbl. temporary allowable, is reacidizing for larger production.

In 18-19-2w5, West-Central field, Davies Petroleums, 5, LSD 10, finished at 7,391 ft., 449 ft. in the Madison, is carrying on systematic acid treatment of a tight-lime formation, in an effort to increase the temporary allowable of 100 bbl. a day.

In 5-19-2w5, Royalite, 51, LSD 13, finished at 7,413 ft., 429 ft. in the lime, is acidizing and testing.

In 29-18-2w5, South West Turner Valley, Commoil, 3, LSD 13, finished close to 8,600 ft. and is starting production tests.

Turner Valley Production

Under the latest schedule of allowables with 26,000 bbl. a day for 111 crude wells, independent producers, with 56 wells, are allotted 10,728 bbl. Of this, Home Oil Co., with three North Turner Valley wells, produces 1,812 bbl. a day. Royalite Oil Co. and associated interests, with 29 wells, produce 8,182 bbl.; Anglo-Canadian Oil Co. and associates, with 19 wells, produce 3,656 bbl.; and Brown Oil Corp. and associates, with 13 wells, produced 1,930 bbl.

Mill Creek Oil Show

On the Mill Creek structure in the southern foothills, close to the Montana boundary, Alliance Royalties, 1, LSD 14, 11-6-2w5, in the lower Blairmore formation at 4,610 ft., showed oil on the drilling fluid, and a 10-ft. section of 4-in. core showed heavy crude saturation. Drilling is being continued several hundred feet through the Dalhousie formation, when casing will be run and the present oil zone perforated and tested. Alliance No. 1 is testing a block of 8,000 acres jointly controlled by Alliance Oils and Anglo-Canadian Oil Co. of Calgary.

Tests in the Foothills

In the northern Clearwater area, Ram River Oils, 2, 1-37-11w5, has resumed after reaming and running casing to bottom at 279 ft.

In the Sheppard Creek area, south of Turner Valley, Alberta Pacific, 1, LSD 6, 7-16-2w5, is below 5,065 ft.

Steveville Field

In the Steveville field, eastern Alberta, Standard of British Columbia, 1 Tide Lake, LSD 9, 19-18-9w4, is below 3,025 ft. and getting close to the limestone. Standard, 1 Princess, LSD 13, 22-20 12w4, is continuing production tests and has acidized one oil horizon but results have not yet been determined.

Vermilion Field

In the Vermilion field, east-central Alberta, Battleview Oils, 2, LSD 13, 20-50-5w4, in the Borradaile district, bottoming at 1,842 ft., has an estimated potential of 250 bbl. a day. It is pumping half capacity, about 120 bbl., which is shipped to North Battleford for fuel purposes. Franco-Battleview, 3, LSD 13, 20-48-5w4, finished at 1,757 ft., made a 4-hour bailing test, indicating potential of 360 bbl.

Ontario Operations

In the Malahide field, Elgin County, Ontario, Union Gas, 44, NW¼ Lot 30, Concession 4, finished a small gasser around 1,075 ft. Union, 45, SE¼ Lot 7, Concession 4, finished a dry hole. No. 46 is being drilled in Lot 2, Concession 4, and No. 47 in Lot 6, Concession 5. Central Pipe Line Co. is rigging on the John Wardle farm, N½ Lot 10, Concession 4.

In the DeClute field, Raleigh Township, Kent County, Union Gas, 50, Lot 141, North Talbot Road, finished at 1,520 ft. with 3,000,000 cu. ft. a day. Gas Producers Syndicate, 6, G. L. Pardo farm, E½ Lot 140, South Talbot Road, finished in the same horizon with around 5,000,000 cu. ft. a day.

Market Record of Active Oil Stocks

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curb Exchange

New York Stock Exchange

1940 High	1940 Low	Week ended July 13 High	Week ended July 13 Low	Week ended July 13 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1939	Com. sh. earn. 1939	Com. sh. earn. 1938	1939 High	1939 Low	1938 High	1938 Low
58½	38½	45	41½	42¼	Amerada Corp.	788,675	N.P.	50cQ	4-30-40	$2.00	$1.56	$2.07	74½	50	78	55
27⅛	18¼	21½	21⅛	21⅛	Atlantic Refining	2,663,999	$25	25cQ	6-15-40	1.00	1.66	1.40	24¾	18⅛	27⅜	17¾
16⅝	8½	9⅝	9⅝	9⅝	Barber Asphalt Co.	390,223	$10	25c	5-21-40	.25	1.39	—.85	21	10¼	23¾	12⅛
13⅜	7⅛	8⅜	7⅞	8⅛	Barnsdall Oil Co.	2,558,779	$5	15c	6-8-40	.90	.76	1.26	19½	11⅛	21⅜	10⅛
8⅛	5½	6½	6¼	6¼	Consolidated Oil Corp.	13,751,726	N.P.	20cQ	8-15-40	.80	.55	.55	9⅞	6½	10⅜	7
25	16⅛	18¼	17¾	18¼	Continental Oil of Delaware	4,682,572	$5	25cQ	3-25-40	1.00	1.35	1.10	31½	19⅞	35¾	21¼
6⅞	3⅜	4	3⅞	3⅞	Houston Oil	1,098,618	$25	....	10-17-30	....	.43	.83	9⅜	4½	9¾	5
14⅜	9	9⅜	9⅛	9⅜	Lion Oil Refining	435,815	N.P.	25cQ	4-20-40	1.00	1.50	2.09	18⅛	10	25⅛	15⅝
17⅜	11½	13¼	12¾	13	Mid-Continent Petroleum	1,857,912	$10	40c	6-1-40	.60	1.42	.56	18	11⅛	22⅝	12¼
11	7⅛	8½	8	8½	Mission Corporation	1,378,645	$10	40c	12-15-39	.65	.87	1.04	14⅞	8¾	17¾	10⅝
9¾	4⅝	6	5½	6	National Supply	1,155,517	$10	....	12-22-37	....	—.87	—.79	15½	5⅝	23	12½
8¾	5⅜	6⅜	6	6¼	Ohio Oil Co.	6,563,377	N.P.	20c	6-15-40	....	—.10	.25	10½	6	14⅞	8⅜
8¼	5⅝	6	5⅝	5⅝	Pacific Western Oil	1,000,000	N.P.	40c	12-19-39	.40	.81	1.22	11⅞	7	15⅞	10¼
10½	6¾	..	..	..	Pan American Pet. Trans.	4,702,945	$5	....	12-31-37	....	1.10	.08	8¾	5	9¼	6¼
41¾	27⅛	32	31	31⅛	Phillips Petroleum	4,449,052	N.P.	50cQ	6-1-40	2.00	2.21	2.03	46½	31¼	44⅜	27¼
22¾	15	17	16½	16¾	Plymouth Oil Co.	1,038,633	$5	35cQ	3-30-40	§1.40	2.38	2.59	24	17⅛	25⅝	15
11½	7	7½	7¼	7⅜	Pure Oil Co.	3,982,031	N.P.	25c	12-20-39	.25	1.11	.38	11¾	6⅛	13½	8¼
8⅜	5⅞	7¾	7⅝	7¾	Richfield Oil Corp.	4,010,000	N.P.	50c	12-18-39	.50	.65	.51	10¼	6⅝	9⅞	5
20	11	13	12¾	13	Seaboard Oil of Delaware	1,244,383	N.P.	25cQ	6-15-40	1.00	1.40	1.52	24⅜	15½	27½	15½
13⅛	7⅝	8⅛	8	8⅛	Shell Union Oil	13,070,625	N.P.	25c	12-20-39	.50	.77	.72	17¼	9⅞	18⅜	10
23¼	12¼	15¼	13¼	15¼	Skelly Oil	995,349	$15	25c	1-30-40	.75	1.99	2.27	29½	15½	34⅜	18½
12½	7⅛	8⅞	8⅝	8¾	Socony-Vacuum	31,206,071	$15	25cSA	3-15-40	.50	1.10	1.29	15⅛	10¼	16⅝	10¾
26⅛	17⅝	19	18⅛	18¼	Standard Oil of California	13,003,953	N.P.	25cQ	3-15-40	1.10	1.38	2.22	33⅝	24¼	34⅞	25⅛
29	20¾	23¼	22⅞	23¼	Standard Oil (Indiana)	15,272,020	$25	25c	6-15-40	1.25	2.23	1.82	30	22¾	35½	24¾
46½	29⅞	34½	32⅝	34½	Standard Oil of New Jersey	27,280,998	$25	1.00†	6-15-40	1.25	3.26	2.86	53½	38	58⅜	39¾
65⅞	47	50½	48½	48½	Sun Oil	2,434,863	N.P.	25c*	6-15-40	1.00	2.74	1.07	66	45¾	65⅛	45
2½	1¼	1⅜	1¼	1¼	Superior Oil Corp.	1,388,979	$1	10c	12-28-38	....	.04	.24	3⅝	1¾	4¼	1¾
47⅝	33	38⅞	38¼	38¼	Texas Corp.	10,876,139	$25	50cQ	4-1-40	2.00	3.02	2.13	50¾	32½	49⅝	32⅝
4¼	2½	2⅞	2¾	2¾	Texas Gulf Producing Co.	888,146	N.P.	10c	6-15-40	.20	.69	.86	5¾	3¼	5⅞	2⅝
8⅝	5½	6⅛	6	6	Texas Pacific Coal & Oil	888,236	$10	10c	6-1-40	.40	1.00	1.16	11⅜	7	12½	7
12	8¾	9½	8⅞	9	Tide Water Associated	6,371,827	$10	25c	6-1-40	.80	1.05	1.28	14¼	9½	15¾	10⅛
17½	12	13	12½	12½	Union Oil Co. of California	4,666,270	$25	25c	5-10-40	1.05	1.25	1.47	19¾	15⅛	22½	17⅛
29⅞	22¾	25½	24½	25½	Union Tank Car Co.	1,177,381	N.P.	45c	6-1-40	1.30	2.07	1.16	24¼	20⅛	23½	20
3⅝	1⅞	1⅞	1⅞	1⅞	Wilcox Oil & Gas	470,768	$5	10c	2-15-40	....	.77	.52	4¼	2⅜	3½	1⅝

*Also 5 per cent in stock. †Includes extras. ‡Also 2 per cent in stock. §Also 4 per cent in stock. ‖Also 2½ per cent in stock. ¶Also 1¼ per cent in stock. —Deficit.

New York Curb Exchange

1940 High	1940 Low	Week ended July 13 High	Week ended July 13 Low	Week ended July 13 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1939	Com. sh. earn. 1939	Com. sh. earn. 1938	1939 High	1939 Low	1938 High	1938 Low
10¾	5	5½	5⅜	5⅜	American Republics Corp.	1,308,049	$10	10c	7-11-38	....	$0.14	—.22	11¾	5½	11¾	5
3¼	1⅜	..	..	..	Bridgeport Machine Co.	263,700	N.P.	$1.25	12-30-37	....	—.95	—.14	7¼	2½	10¼	4⅞
43	28	35½	34	34	Buckeye Pipe Line Co.	200,000	$50	$1	6-15-40	$2.50	3.13	2.36	34¾	26½	39	22¼
117	95	104½	104½	104½	Chesebrough Mfg. Co.	120,000	$25	$1.50Q†	6-24-40	6.00	7.87	5.32	130	108⅝	128	97
6¾	4	6⅛	5	6⅛	Cities Service (new)	3,703,978	$10	....	6-1-32	....	.68	.23	9¼	4¼	11	5⅛
2⅛	1⅛	1⅝	1⅜	1⅝	Cosden Petroleum	465,332	$1	....	.....	....	....	....	2¼	½	2⅜	⅞
24¼	13	14	13⅞	13⅞	Creole Petroleum	6,974,356	$5	50cSA†	6-15-40	1.00	1.38	1.64	28	16¾	27½	17½
4⅜	2⅞	..	..	..	Darby Petroleum	351,390	$5	25cSA	1-15-39	.25	.03	.69	7⅛	3⅝	10¼	5½
2	1¼	..	..	..	Derby Oil & Refining	263,162	N.P.	....	.....	....	—.37	—.91	2⅝	1½	3½	1½
31	23½	..	..	..	Eureka Pipe Line	50,000	$50	75c	5-1-40	2.00	.63	—.37	23	15⅛	31	16
39⅞	25⅛	29½	27½	29½	Gulf Oil Corp.	9,076,202	$25	25cQ	7-1-40	2.00	1.69	1.43	45⅛	29¼	46⅞	33
68	47⅛	53½	52¼	53½	Humble Oil & Refining	8,987,840	N.P.	62½c	7-1-40	2.00	3.33	3.98	71	52½	72⅝	56
12⅜	5½	6½	6¼	6¼	Imperial Oil of Canada	26,965,078	N.P.	37½c†	6-1-40	1.00	.71	.96	17	11⅜	19½	14⅛
7¾	3⅝	3¾	3⅝	3⅝	Indiana Pipe Line	300,000	$7.50	10c	5-15-40	.50	.33	.47	7¼	5½	9⅜	6
19¾	8¼	9¾	9¼	9¼	International Petroleum	14,324,088	N.P.	75c	6-1-40	1.75	1.19	1.98	27½	17	31¼	21
2¾	1⅝	..	..	..	Kirby Petroleum Co.	500,000	$1	10c	4-15-38	....	.06	.14	3¾	2⅛	5	2⅛
10¾	7⅝	9⅛	9	9⅛	Lone Star Gas	5,518,347	N.P.	20c	4-22-40	.70	.98	.88	10½	7⅛	10⅝	6⅝
6¼	3¾	4⅝	4⅜	4⅜	Louisiana Land & Exp.	2,966,762	$1	10c	6-15-40	.35	.22	.45	7⅝	4	9⅜	6½
17	14½	..	..	..	Margay Oil Corp.	149,943	N.P.	25cQ	7-10-40	1.00	1.52	2.28	17	14½	24	16
8½	6½	6⅝	6⅝	6⅝	Midwest Oil Co.	998,474	$10	45c	6-15-40	.90	.99	.93	8¾	6⅝	9¾	6⅝
6¼	4⅞	5¼	5	5⅛	Mountain Producers	1,593,584	$10	30cSA	6-15-40	.60	.70	.62	6	4⅞	5⅝	4½
13⅛	10	10⅞	10	10	National Fuel Gas	3,810,183	N.P.	25cQ	4-15-40	1.00	.95	.84	14	11¼	14⅝	11½
12½	8¾	10	10	10	National Transit	509,000	$12.50	50c	6-15-40	.85	.91	.88	9½	7¼	9¼	6½
1¼	⅞	⅞	⅞	⅞	New Mexico and Arizona	1,000,000	$1	1c	12-1-37	....	.02	.02	1⅝	1	2⅝	1½
7¾	5⅝	..	..	..	New York Transit	100,000	$5	25c	4-15-40	.40	.88	.16	6	4	4½	3½
9⅞	6	..	..	..	Northern Pipe Line	120,000	$10	40c	6-1-40	.30	.31	.24	7	4½	6	4
5½	2½	3	2¾	3	Pantepec Oil	2,856,872	$1	....	.....	....	....	....	7⅝	4	7¾	3½
3¼	1½	..	..	..	Root Petroleum Co.	336,045	$1	25c	2-1-37	....	.70	.17	5	1¼	4½	1⅝
2½	1½	1½	1½	1½	Ryan Consolidated	298,931	N.P.	....	.....	....	.16	.29	3	1⅞	4	2⅛
11¾	4⅞	7⅜	7	7⅜	Southern Pipe Line	100,000	$10	15c	3-1-40	.30	.25	—.27	4⅞	3½	5⅝	3¼
44	28	33	32¾	33	South Penn Oil	1,000,000	$25	37½c	6-28-40	3.00	2.84	1.44	40½	26¾	39	28¾
35	22	22	22	22	Southwest Penna. Pipe Lines	35,000	$50	50c	7-1-40	2.00	2.06	—.41	23	18	22¼	16½
20⅞	16½	18	18	18	Standard Oil of Kentucky	2,604,790	$10	25c	6-15-40	1.30	1.53	1.45	20⅛	17¼	18⅝	15
41¾	26¼	30¾	30½	30⅝	Standard Oil of Ohio	753,740	$25	25c	6-15-40	1.50	6.64	1.81	32¾	17	22¾	16¼
2	1⅜	1½	1½	1½	Sunray Oil	1,975,876	$1	5c	5-1-40	.10	.25	.23	2⅜	1⅜	3¼	2
2¾	2	2¼	2¼	2¼	Texon Oil & Land	936,024	$2	10c	3-29-40	.10	.49	.56	4	2⅝	5¼	3½
3⅜	2	2⅜	2¼	2⅜	Transwestern Oil Co.	750,000	$10	....	.....	....	—1.42	—.12	6	2½	7⅝	4¼
2⅛	‖	1½	1⅜	1⅜	United Gas Corp.	7,818,959	$1	....	.....	....	—.55	—.51	3⅜	1½	5¼	2⅝

†Includes extras. —Deficit.

Personal Paragraphs

GEORGE E. FRAZER, Chicago, counsel for the Association of Gas Appliance and Equipment Manufacturers, has been honored with the degree of doctor of laws by Washburn College, Topeka, Kans.

DR. RALPH F. NIELSON, oil research engineer, Tulsa, and JOHN A. CHAMBERLAIN, who was previously engaged in testing petroleum products for the Pennsylvania Department of Highways, have been added to the research staff experimenting with petroleum water-flooding methods in the Mineral Industries Experiment Station at Pennsylvania State College. The research is sponsored by a group within the Bradford District Pennsylvania Oil Producers Association.

J. W. COLLINS, for several years with the land department of Phillips Petroleum Co.'s Amarillo, Tex., office, has been transferred to St. Joseph, Mo., where he will take up active scouting duties in Iowa.

P. A. KELLY, formerly with Hagy, Harrington & Marsh, is chief inspector for Michigan Gas Transmission Co. at Rockville, Ind., where the company is laying a 53-mile pipe line.

R. G. GWILLIAM, vice president and general manager of the Gulf Coast division for Ohio Oil Co., Houston, Tex., made a tour of inspection through the Southwest Texas district the past week.

GEORGE VANDEVER, formerly engineer for Phillips Petroleum Co. at Shreveport, La., and Houston, Tex., for the E. H. Moore, Inc., at Tulsa, is now the engineer for Mid-States Oil Co. at Tulsa.

EVERETT BRADLEY, independent operator and geologist of Wichita, Kans., and his bride are expected to return to that city the latter part of this month following a honeymoon in the Hawaiian Islands.

J. S. EWING, production superintendent for Cox & Hamon, has moved his office from Healdton, Okla., to Dallas, Tex., in order that he might better superintend the company's activities in North Texas fields.

GLENN R. WINTERS has resigned from his position as public relations representative for Shell Oil Co., Inc., to become assistant secretary of the American Judicature Society at University of Michigan, Ann Arbor.

DWIGHT G. DAYHOFF and ALBERT J. GREEN have been retired by Carter Oil Co., Tulsa, after periods of service of 20 and 21 years, respectively.

J. E. POWERS, a new man with the Continental Oil Co., has been appointed wholesale gasoline and oil-marketing manager for the Marshall, Tex., district by the company. He replaces VERNON JONES, who is in failing health.

GUY W. FALLON, vice president and general manager of the Public Service Co., Denver, Colo., since March 1934, has been named president of the firm, to succeed the late Henry L. Doherty. The Public Service Co. is a subsidiary of Cities Service Oil Co.

G. R. COTTRELLE, a director and official of the Canadian Bank of Commerce, Toronto, Ont., Canada, has been appointed as controller of petroleum for Canada and will serve under the wartime prices and trade board.

E. Q. CAMP, of Humble Oil & Refining Co., at Baytown, Tex., has been appointed a member of the committee on corrosion of refinery equipment and the committee on disposal of refinery wastes of the American Petroleum Institute. He succeeds W. R. HICKS on both groups.

W. C. LOVE, sales promoter-reseller of the Detroit, Mich., sales division of Standard Oil Co. of Indiana and former analyst-wholesaler at Saginaw, Mich., who has been promoted to assistant manager, has returned to Saginaw to succeed W. J. Riepe, who died June 30.

CHARLES S. SMITH, formerly vice president in charge of sales for National Refining Co., Cleveland, Ohio, resigned last week to become general sales manager of the White Star-Ohio division of the Socony-Vacuum Oil Co., Inc., after having been with National for 35 years. C. W. MANVILLE, who recently joined National after several years with Shell Oil Co., Inc., has been appointed to succeed him as general sales manager. PAUL RYAN, National president, also announced the appointment of HENRY G. GOEHRING as industrial-relations manager.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

W. S. Fitzpatrick, Jr., son of W. S. Fitzpatrick, general counsel of Prairie Oil & Gas Co., is determined to know how the oil game is conducted and to obtain the knowledge from the ground up, has become a tool dresser in the Cushing field.

When J. George Wright, Indian agent at Pawhuska, Okla., learned that Barnsdall Oil Co. had decided to "pull" 200 small wells in the Osage district, he gave immediate orders that no well was to be pulled without 30 days' notice.

California operators organized the Western Oil Producers Association for the purpose of obtaining remedial legislation affecting the oil business in that state, especially the land-withdrawal question.

20 YEARS AGO

J. G. Trees, president of Arkansas Natural Gas Co., reports the company will redeem all its outstanding $2,365,000 preferred participating stock, payment to be made at the office of the company in Pittsburgh, Pa., at the rate of 110 per cent.

The Department of Justice at Washington has ordered an investigation of the oil industry, and the Federal Trade Commission is investigating alleged violations of the antitrust law by oil interests.

10 YEARS AGO

C. G. Staley, New Mexico state geologist, has been appointed umpire for the Hobbs field, which has been prorated to 35,000 bbl. daily.

Directors of Sinclair Consolidated Oil Corp. have approved the sale for $72,500,000 cash of the company's half interest in Sinclair Pipe Line and Sinclair Crude Oil Purchasing companies to the Standard Oil Co. of Indiana.

H. F. SMILEY has opened offices at 624 Hamilton Building, Wichita Falls, Tex., for consulting practice of petroleum geology.

E. H. MOORE, independent producer of Tulsa, is in Chicago this week attending the convention of the Democratic Party as a delegate at large.

AL PHILLIPS has been promoted to chief engineer of Wabash station of the Wabash Pipe Line Co., subsidiary of Pure Oil Co., for transporting oil from Illinois fields.

H. C. SPOOR, JR., formerly superintendent of the geological department for Union Producing Co., Houston, Tex., has resigned and is now engaged in business for himself as consulting geologist.

FRANK KITTELL is chief inspector for Northern Natural Gas Co. at the construction work being done in the vicinity of Bushton, Kans., where the company is laying pipe in a looping program.

DON NEWELL, geologist for Phillips Petroleum Co. at Corpus Christi, Tex., left last week for a 2-week military-training period at Camp Bullis. Mr. Newell is a lieutenant in the U. S. Army reserves.

STANLEY W. DUHIG, vice president and treasurer of Shell Union Oil Co., New York, was one of 10 members named by the Controllers Institute of America as available to act in an advisory capacity to Leon Henderson, member of National Defense Advisory Commission in charge of price-stabilization problems.

L. W. SHERWOOD, engineer with Rodessa Oil & Refining Corp., Shreveport, La., has resigned to join the Frick-Reid Supply Corp. in Illinois.

J. W. RAWLEY, of the Seaboard Oil Co., has returned from Illinois to Corpus Christi, Tex., where he has been appointed district land man for the company.

DAN CAMERON, Carter Oil Co. scout, has been transferred from Michigan to Jackson, Miss., where he succeeds T. G. PRICE, who has been transferred to Ardmore, Okla.

A. C. RUBEL, vice president and director of production for Union Oil Co. of California, and EARLE NOBLE, chief geologist for the company, both of Los Angeles, Calif., are in coastal Louisiana watching the completion of the company's wildcat which looms as the discovery well of a new field.

GEORGE W. STRATTON has been elected president of the recently organized Douglas Oil & Refining Co. WILLIAM P. ANDREWS was elected vice president and director of operations; A. L. BERGERE, secretary-treasurer; DAVID MOORE, comptroller, and FRED DAVIES, director of sales.

JOHN O'MELVENY, California operator; REESE H. TAYLOR, president of Union Oil Co.; HARRY J. BAUER, president of Southern California Edison Co., which has productive properties at Wilmington and other California fields, and ALEXANDER MACBETH, of Southern California Gas Co., have been elected trustees of the California Institute of Technology.

Got Start as Roustabout

J. J. Frommer's service with the Ohio Oil Co. covers a period of 26 years and has ranged over four states. Hailing from the Buckeye State, Mr. Frommer's association with Ohio Oil Co. began in the panic year of 1907, when he was employed as a roustabout and pumper at Bridgeport, Ill. He left the service of the company in 1912, but returned in 1919 when the company, through its subsidiary, Mid-Kansas Oil & Gas Co., began operations at Ranger, Tex. His new service began as farm foreman, and in late 1920 he was transferred to Comanche, Stevens County, Oklahoma, as district foreman. In May 1927, Mr. Frommer was transferred to the Yates field in Pecos County, Texas, as district superintendent. Two years later he was again transferred, this time to Oklahoma City, as division superintendent in charge of field operations in Nicoma Park and Edmonds fields and northwestern Oklahoma. On July 1, 1937, he was sent to Houston, Tex., as general superintendent of the Shreveport division.

J. J. FROMMER

Ohio's new Shreveport superintendent is a member of the advisory committee of the American Petroleum Institute's division of production for 1940-41, for the southwestern district. A married man, but without children, Mr. Frommer is an ardent bowler and also enjoys hunting, tennis and golf, as well as taking motion pictures.

J. E. DOFFING is in charge of the new Jackson, Miss., office of the drilling contracting firm, Cortes McRae, Inc., of Houston, Tex.

DR. N. E. LOOMIS, of the Standard Oil Co. of New Jersey, spent several days in Los Angeles, Calif., last week en route for a vacation to be spent in Honolulu.

F. JULIUS FOHS, president of the Fohs Oil Co., Houston, Tex., is spending considerable time near Maxie, Miss., following the spudding of the company's wildcat operation.

DONALD B. NEILL, who has been with the Independent Refiners Association of California, Inc., has been appointed general manager of the association succeeding WILLIAM S. SCULLY, who recently resigned to enter the private practice of law.

HENRY TOLER, Southern Natural Gas Co., Jackson, Miss., as president of the Mississippi Geological Society, is in charge of preparations of a geological exhibit to be shown at the Mississippi Oil Exposition to be held in Yazoo City August 28 and 29.

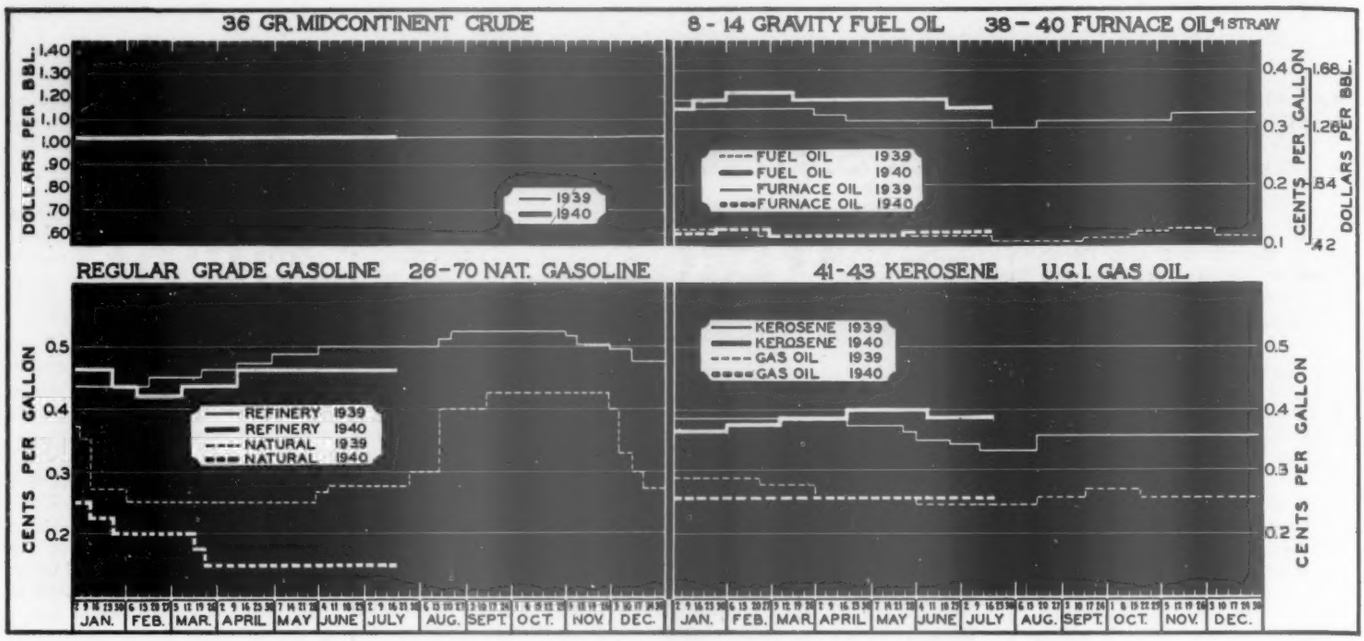
W. H. CORREA, of Socony-Vacuum Oil Co., Inc., chairman of the lubrication committee of the American Petroleum Institute, held a meeting in Los Angeles, Calif., this week which was attended by R. A. LUDLOW, director of the committee; J. M. KOCH, of Quaker State Oil Corp.; M. B. CHITTICK, of Pure Oil Co.; J. H. LEE, of Shell Oil Co., Inc.; J. M. EVANS, of Tide Water Associated Oil Co., San Francisco; H. G. VESTER, of Standard Oil Co. of California, San Francisco, and R. CUBICCIOTTI of Union Oil Co.

O. H. REAUGH, engineer for Gulf Oil Co., addressed members of the Seminole, Okla., chapter of the American Petroleum Institute, last week. He discussed methods of plugging off and perforating upper horizons where oil shows were encountered during drilling. ED KLOPFENSTEIN, superintendent of the Indian Territory Illuminating Oil Co., read a paper dealing with the operation of cementing liners through the first Wilcox and drilling into the second Wilcox.

W. W. FLEMING, vice president of Ohio Oil Co., has been elected chairman of the newly formed Cotton Valley operators committee, which will develop, produce and initiate pressure maintenance in the unitized Cotton Valley field, as agent to all operators signing the unitization agreement. Committee members, their representative companies and alternates include: W. W. Fleming, Ohio Oil Co., alternate, J. J. FROMMER; J. R. PARTEN, Woodley Petroleum Co., alternate, H. W. DAVENPORT; C. N. BLACK, Magnolia Petroleum Co.; W. F. DALTON, Hunt Oil Co., H. L. Hunt and Hassie Hunt interests, alternate, H. L. HUNT; E. V. WHITWELL, Oliphant Oil Corp., alternate, J. R. MURPHY; T. W. JOHNSON, Union Producing Co., alternate, E. L. RAWLINS; ARTHUR G. LEVY, Fohs Oil Co., alternate, LESLIE MOSES; ROY DAVIS, representing North American Oil Consolidated, W. G. Ray Drilling Co., Inc., and W. C. Woolf; FRANK PICKELL, Stanolind Oil & Gas Co., alternate, T. L. REGAN; H. CANON, Root Petroleum Co.; J. B. ATKINS, representing himself and Jabco, Inc.; A. J. LANIER, representing the Rougon interests; J. P. D'ARTOIS, representing the interests of G. H. Vaughn, M. H. Marr, Sidney G. Myers and Mrs. Nellie G. Myers; W. A. DELANEY, JR., representing himself with J. P. D'Artois, alternate; and S. P. WEAVER, Weaver Lumber Corp. Mr. D'Artois has been elected secretary of the operators' committee.

Shifts: BOB O. BIRD, superintendent, Phillips Petroleum Co., from Vernon, Tex., to Wewoka, Okla.; IVAN J. FENN, geologist, Subterrex Co., from Houston, Tex., to Salem, Ill.; F. W. THAISON, manager, F. W. Thaison & Co., from Houston, Tex., to Santa Monica, Calif.; W. B. JANUARY, superintendent, Magnolia Petroleum Co., from Kermit, Tex., to Montell, Tex.; FRANCIS G. PHILLIPS, engineer, Shell Oil Co., Inc., from White Castle, La., to Iowa, La.; T. C. CRONKHITE, superintendent, Adams Oil & Gas Co., from Centralia, Ill., to Carlyle, Ill.; MARVIN REMKE, engineer, Carter Oil Co., from Mattoon, Ill., to Altamont, Ill.; W. W. STRICKLER, manager, W. W. Strickler & Co., from St. Louis to Clayton, Mo.; C. T. SCHIEMAN, JR., engineer, Linde Air Products, from Wichita, Kans., to Tulsa.

INTERNATIONAL: Several oil men left New York last week for South American and West Indies ports. Among them were: H. L. FOUNTAIN, tool pusher; BERNARD BONGERS, tool pusher; U. HAANSTRA, paleontologist, and MR. HAZZARD, chemist, all of the United British Oilfields of Trinidad, Ltd., whose destination is Point Fortin, Trinidad, British West Indies. J. W. STRINGER, production superintendent, Trinidad Leaseholds, Ltd., sailed for Pointe-a-Pierre. M. O. SMITH, drilling superintendent, British Controlled Oilfields, Ltd., has left for Maracaibo, Venezuela, as has G. W. VAN HILLO, production engineer, Caribbean Petroleum Co. CHESTER CREBBS, president, Mene Grande Oil Co., has returned to Venezuela. J. A. CLARK, general manager, Lago Petroleum Corp., sailed Friday for Maracaibo. Among oil men scheduled for departure soon are C. NORMAN SMITH, exploration engineer, Kern Trinidad Oilfields, Ltd., who will go to Trinidad, and LEONARD STEVENS, production engineer, Caribbean Petroleum Co., whose destination will be Venezuela. Trinidad oil men who are vacationing in the United States now include LOU KENNEY, driller, United British Oilfields of Trinidad, Ltd., Point Fortin, who is in New York City, and FRANK ANDERSON, production department of the same company, who with Mrs. Anderson is vacationing in the Adirondacks.



Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Excessive Gasoline Inventory Nullifies Record Demand From Group 3 Area

By H. STANLEY NORMAN

GASOLINE is moving at a progressively higher rate from Group 3 refineries, but the depressing influence of excessive stocks within the area and in neighboring refining districts precludes the possibility of early improvement in prices.

Major companies are active spot buyers for the third consecutive week, although the importance of this market element was not felt until the second week in July.

Spot gasoline purchases by major companies are moving north, where even the most optimistic estimates on summer demand are being exceeded daily.

Shipping Instructions Brisk

Contract customers are entering shipping instructions for motor fuel in excess of their earlier estimates on maximum requirements. The volume of domestic consumption is considered highly satisfactory. Indications are that the gain of more than 8 per cent in domestic gasoline demand so far this year will be exceeded in June and probably in July when final figures become available.

Demand for light distillate fuel oils in the Group 3 territory is gaining. Spot sellers reported orders in increasing volume and the market gives indications of moving forward. The improvement in distillates has hardly covered a sufficient period to consider current moves as more than temporary. Sellers could not place their fingers on any definite development which would account for activity in light fuel oils. Nevertheless, several tank cars sold in the open market at unchanged prices.

Residual fuel oils held their previous market position. There has been no particular activity, but the movement at rates higher than normal for the season continues. There is no disposition on the part of refiners in the Group 3 area to shade heavy fuel-oil prices for the sake of immediate business. The attitude appears general for the entire refining industry that residual fuels are likely to be in the van of demand for petroleum products in prosecution of the defense program.

Lubricating oils in the Group 3 territory moved in routine fashion. The reduction in Pennsylvania crude-oil prices caused some concern among Mid-Continent lubricating-oil producers. Fear exists that the crude cut will be interpreted in further softening of lubricants. There is a fairly intimate relationship between Group 3 and Pennsylvania lubricants and the market situation in one district is certain to influence the other territory.

Natural gasoline occupies a paradoxical position in Oklahoma and Kansas. Demand for natural within the immediate refining districts of those two states is considered better than fair. Prices are low but the market structure within the differential territory is much stronger than in North Texas and the Panhandle. Stocks of natural are abundant on the Gulf Coast. Export demand continues disappointing. Movement of North Texas and Panhandle natural to the Gulf can not attain normal proportions until excessive stocks are liquidated.

Refinery Profits Doubtful

Refinery gasoline in Oklahoma ranges from 3¾ to 4⅝ cents per gallon, depending on octane and distillation limitations. It is doubtful in the minds of cost analysts that refiners can break even at the current prices unless they are equipped to command premium prices.

A complete check was impossible on the volume of gasoline sold by Group 3 refiners to major companies. One large company bought 450 cars of gasoline from Group 3 refiners. The business was divided among several suppliers at current quotations. Other major companies were buying on a more modest scale. Prospects for an improvement in the open market for motor fuel seem remote to many long-time students of price behavior.

There is no doubt that gallonage is a potent tonic to refiners. Usually, July gasoline prices at the range prevailing this year would be cause for much deploring. An occasional voice is raised calling attention to excessive inventories, but the industry as a whole is less than a little concerned about prices. Far more interest is manifest in the loss of export trade than in record-breaking domestic consumption.

Refined Oil Market Barometer

Gasoline purchases by major marketers in the Group 3 refining district quickened this week. Shipping instructions against contracts are in keeping with record-breaking domestic demand. Prices are stagnant. Distillate fuel oils are moving more rapidly. Residual fuels are firm. Natural-gasoline business is dull.

MID-CONTINENT. Majors buying gasoline more freely. Distillate fuels stirring.

EAST COAST. Gasoline movement continues at record levels. Fuel oils in seasonal lull.

GULF COAST. Heavy fuel oil regains strength. Gasoline soft.

PENNSYLVANIA. Crude cut reflects market weakness of lubricating oils.

CALIFORNIA. Kerosene and distillate fuel stocks low. Motor fuel unchanged.

CHICAGO. Retail market for gasoline gaining strength. Residual fuels firm.

Eastern Coast Refined Market Undergoes Minor Changes

By J. P. O'DONNELL

NEW YORK, July 16.—Outside of a few minor changes, mostly in the nature of adjustments, the East Coast refined market passed through the early part of July with no major alterations though there was evidence of weakness in several products. There was little evidence, however, to indicate whether these weaknesses would translate themselves into general reductions or be dissipated by some stimulating factors.

Last week's gasoline changes were confined to a few scattered adjustments, both upward and downward, in dealer tank-wagon prices, principally in the vicinity of a half cent. The lone change elsewhere in dealer tank-wagon prices was made in North Carolina where Standard Oil Co. of New Jersey reduced its price 0.5 cent to meet competition. An unhealthy situation has prevailed in this area for several months.

The statistical position of gasoline in the East Coast area was considerably improved in the previous week when 757,000 bbl. were taken out of storage. This brought total stocks of finished and unfinished gasoline down to 22,286,000 bbl. which is only 4 per cent above the level of a year ago. Another important factor affecting the gasoline situation is that the motor-fuel yield has been reduced in order to produce more fuel oil. Yields in May, for example, were 42.3 per cent gasoline and 13.0 per cent distillate against 44.4 per cent gasoline and 11.7 per cent distillate in May 1939. The belief is held that the reduced gasoline yield plus the currently good domestic demand may result in bringing storage to an approximately economic level by the end of the normal heavy consuming season.

There was evidence of slightly greater strength in the Gulf Coast gasoline market, which had its foundation in a minor strengthening of the high quotations, indicating less low-priced material available. This strengthening was apparently limited to 60-62-gravity, 400-end-point material. Strengthening of Gulf markets would, of course, reflect quickly in East Coast markets. If this suggestion of strength materializes and if storage reductions continue at anything like the pace of the first week in July an improved gasoline market can be anticipated. Along this line it was pointed out that the inventory reduction in the July 4 holiday week this year was much greater in the eastern area than it was a year ago.

The only disquieting feature of the gasoline market is the report that some gasoline is available in barge lots at 5½ cents, a quarter cent off the prevailing rate generally quoted. This report, however, received little substantiation.

After dipping in the preceding week, light-fuel-oil and kerosene prices were reported unchanged last week. Apparently the widespread reductions in kerosene tank-wagon prices the week before were sufficient to ease the unsettled condition that prevailed. From present indications, the fuel-oil market is more or less hitched to the tanker situation and whatever happens in the latter will directly affect fuel-oil prices.

Tanker rates refused to continue their sharp decline of the previous week and prices for Gulf-to-north-of-Hatteras charter business continued in range of 25 cents for light crude to 30 to 35 cents for gasoline. The report of the availability of tankers at 30 cents for the movement of gasoline indicates a weakness though, for the asked price the week before was 35 cents. Another slight indication of weakness was seen in the report of the chartering of a clean boat for Gulf-to-South Atlantic trade at less than 25 cents.

However, coastwise tanker trade remains inactive, a normal condition in the month of July since much of the gasoline business has been taken care of and fuel-oil shipments for the year have not yet begun in earnest. As a result it is reported that from 20 to 30 tankers will be taken off the market in the immediate future, which should tend to stiffen charter rates.

Residual fuel oil continued unchanged, supported by continued fair industrial demand, though some quarters reported keen competition in the retail field with more or less price shading. Prices were generally quoted at the same levels as before. Gains in East Coast residual-fuel-oil stocks in the week before last doubled those of the preceding week, a change that should adversely affect the market.

The local market for Bunker C fuel oil continues unchanged at $1.35 per barrel. Reports on this product have been somewhat mixed. In midweek it was reported that there was some Bunker C oil available at $1.25, 10 cents off the market, but this report was unconfirmed. The generally quoted price remains $1.35 and with a stronger Gulf market and further indications of a good domestic demand, expectations are that it will be maintained.

Diesel oil, reduced 15 cents per barrel in the New York Harbor area and 0.3 cent in the tank-car lots last week, also gave evidence of maintaining those levels. There were no reported indications of price shading so that prospects of the new prices holding are considered good. Current spot market quotations for diesel oil are $1.80 for ships' bunkers and 4.5 cents per gallon in tank-car lots.

The Pennsylvania lubricating-oil market experienced an uneventful week and prices, both domestic and export, showed no change. Export prices at the close of the week were reported as follows: Bright stock, 22; 600 unfiltered, 16½; 650 unfiltered, 17½; 600 flash, 18½; 630 flash, 21; 200 neutral, 27, and 150 neutral, 25. Virtually no export business is reported and indications are that domestic demand is far from sufficient to offset the loss of foreign shipments. An example of how

(Continued on Page 111)

Gulf Coast Markets

HOUSTON, Tex., July 16.—The slowing up in demand for heavy fuel oils that was indicated early last week on the Gulf Coast proved short-lived with one of the major companies coming into the market later in the week for additional supplies. It was reported this company had placed inquiries to fill two cargoes for coastwise movement. While the price was not stated no seller is known to be quoting under 80 cents for Bunker C grade and most of them are asking as high as 85 cents, with the market leaning heavily to the strong side.

It also was reported there were several inquiries out for gasoline, both for export and coastwise but these could not be verified, and the reports were generally discounted as fantastic the same as numerous other such reports that have passed around within the past several months. It is known that any bona fide buyer would not have to inquire very far for any amount of material and would find little difficulty in striking a bargain.

Offsetting these reports in gasoline inquiries that ordinarily would tend to stiffen markets, material was being offered at new low quotations. At least two sellers indicated they would accept 4 cents for 72-74-octane (leaded) gasoline. This price is about a quarter cent below prevailing quotations for the same product. Movement of gasolines on domestic contracts increased during the week but so far as spot sales were concerned

(Continued on Page 111)

A.P.I. Weekly Refinery Statistics

Week Ended July 13, 1940

	Capacity reporting (per cent)	Total gasoline stocks (bbl.)	Residual fuel-oil stocks (bbl.)	Gas oil and distillate stocks (bbl.)	Daily crude runs (bbl.)
East Coast	100.0	22,671,000	10,270,000	11,775,000	560,000
Appalachian	91.0	3,475,000	488,000	331,000	117,000
Ind., Ill., and Ky.	90.2	15,645,000	3,373,000	4,152,000	603,000
Okla., Kans., and Mo.	76.9	6,685,000	2,065,000	1,297,000	268,000
Inland Texas	59.6	1,786,000	1,349,000	321,000	123,000
Texas Gulf	85.3	13,926,000	5,732,000	5,175,000	837,000
Louisiana Gulf	97.6	2,533,000	1,273,000	1,181,000	122,000
N. Louisiana and Ark.	51.5	518,000	491,000	273,000	42,000
Rocky Mountains	55.5	1,252,000	596,000	131,000	45,000
California	87.3	16,851,000	77,833,000	9,925,000	466,000
Total reported	85.3	85,342,000	103,470,000	34,561,000	3,183,000
Est. unreported	.....	7,030,000	2,240,000	1,660,000	382,000
*Est. total	.....	92,372,000	105,710,000	36,221,000	3,565,000
*Est. total previous wk.	.....	93,275,000	105,343,000	34,730,000	3,575,000
*July 14, 1940	.....	79,342,000	113,745,000	33,217,000	3,390,000

*Bureau of Mines.

Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATE)

Week ended July 6, 1940	261,632,000 barrels
Week ended June 29, 1940	262,059,000 barrels
Week ended July 8, 1939	269,348,000 barrels

Figures do not include stocks of heavy, unrefinable California crude.

Retail Oil Markets

Tank-wagon and filling station prices on gasoline and kerosene furnished by the larger marketing firms

Prices as of July 16, 1940

Taxes

The gasoline quotations given in the following tables include the 1½-cent federal tax, as well as state, county, and city taxes. The gasoline is the regular or standard grade. In most areas lower grades and a premium grade also are available.

Standard Oil Co. (Indiana)

	Gasoline			Kero.
	Tank wag.	Dlr.	Incl. tax	tank wag.
Chicago, Ill.	15.6	13.6	4.5	10.0
Decatur	14.1	12.6	4.5	9.5
Joliet	15.6	14.1	4.5	10.0
Peoria	15.6	13.2	4.5	10.0
Quincy	15.4	13.9	4.5	9.8
Davenport, Ia.	15.6	14.1	4.5	‡10.0
Des Moines	15.4	13.9	4.5	‡9.8
Mason City	15.8	14.3	4.5	‡10.2
Duluth, Minn.	17.4	15.9	5.5	10.8
Mankato	17.0	15.5	5.5	9.0
Minneapolis	17.0	14.0	5.5	10.4
LaCrosse, Wis.	17.0	15.5	5.5	10.4
Green Bay	17.4	15.9	5.5	10.3
Milwaukee	16.8	15.3	5.5	10.2
Detroit, Mich.	14.1	12.6	4.5	7.6
Grand Rapids	13.7	11.9	4.5	9.0
Saginaw	14.7	13.2	4.5	9.3
Evansville, Ind.	17.1	15.6	5.5	†10.5
Indianapolis	17.3	14.8	5.5	†10.2
South Bend	17.3	15.8	5.5	†10.2
Fargo, N. D.	18.2	16.7	5.5	11.6
Huron, S. D.	17.5	16.0	5.5	10.9
Kans. City, Mo.*	14.9	13.4	4.5	8.0
St. Louis*	15.2	13.2	4.5	8.0
St. Joseph	14.9	12.5	4.5	7.9
Wichita, Kans.	13.8	12.1	4.5	7.0

*State tax 2 cents, 1-cent city tax, and 1½-cent federal tax. †Does not include 4-cent state tax. ‡Does not include 3-cent state tax.

Exclusive of state general sales taxes.

Discounts to commercial consumers: On purchases per month off tank-wagon prices: 1,000 gal. or more, 1.5 cents off; minimum delivery 25 gal.

Stanolex Fuel Oil in Chicago

Effective April 18, 1940, f.o.b. Chicago, tank-wagon prices: Standard heater oil, 1-99 gal., 8.75 cents; 100-149 gal., 7.75 cents, 150 gal. and over, 7.25 cents. Stanolex fuel oil No. 1, 1-99 gal., 8.5 cents; 100-149 gal., 7.5 cents; 150-399 gal., 7 cents; 400 gal. and over, 6.5 cents. Stanolex furnace oil, 1-99 gal., 8.5 cents; 100-149 gal., 7.5 cents; 150-399 gal., 7 cents; 400 gal. and over, 6.5 cents. Stanolex fuel oil A, 1-399 gal., 5.5 cents; 400-799 gal., 4.5 cents; 800 gal. and over, 4.25 cents. Stanolex fuel oil B, 1-399 gal., 5.5 cents; 400-799 gal., 4.5 cents; 800 gal. and over, 4.25 cents. Stanolex Bunker C fuel oil, 1-999 gal., 4.25 cents; 1,000 gal. and over, 3.25 cents.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline			Kero.
	Cons'r tank wag.	Dlvided dlr.	Incl. tax	tank wag.
Ohio points	16.0	15.0	5.5	*9.0

*Includes state tax of 1 cent.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline			Kero.
	Cons'r tank car	Dlr. tank wag.	Incl. tax	tank wag.
Atl'tic City, N. J.	12.1	13.2	4.5	7.7
Newark	12.1	13.2	4.5	7.7
Annapolis, Md.	13.85	14.85	5.5	9.5
Baltimore	13.25	14.25	5.5	9.0
Cumberland	14.65	16.65	5.5	10.0
Wash'gton, D. C.	11.50	12.50	3.5	9.5
Danville, Va.	15.45	17.95	6.5	11.0
Norfolk	14.25	16.75	6.5	10.5
Petersburg	14.55	17.05	6.5	11.2
Richmond	14.55	17.05	6.5	10.5
Roanoke	15.75	18.25	6.5	11.0
Charles'n, W. Va.	15.05	17.55	6.5	12.6
Parkersburg	14.35	15.85	6.5	11.2
Wheeling	15.35	17.25	6.5	11.8
Charlotte, N. C.	17.40	17.50	7.5	11.8
Hickory	17.95	19.45	7.5	12.3
Mt. Airy	17.80	19.30	7.5	12.2
Raleigh	17.15	16.5	7.5	11.5
Salisbury	17.45	16.50	7.5	11.9
Charleston, S. C.	15.25	17.75	7.5	9.75
Columbia	16.10	18.60	7.5	11.5
Spartanburg	16.80	19.30	7.5	12.7

Price basis to Essolene undivided dealers: Dealer tank-wagon price less 0.5 cent per gallon. Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia; and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at time by hose connection, on yearly purchases: From 2,500 to 100,000 gal., consumer tank-wagon price at time and place of delivery; 100,000 gal. per year, consumer tank-car price plus 0.5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less 0.5 cent per gallon.

Effective January 16, 1939, in North Carolina the commercial consumer schedule became as follows: Single deliveries of 50 gal. or more, consumer tank-wagon price. Single deliveries of less than 50 gal., 4 cents per gallon over consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price, less 0.5 cent per gallon. The above policy also applies in South Carolina, effective January 23, 1939.

Discounts for kerosene, 1 cent off tank-wagon price for 25 gal. or more under contract (contract not necessary in Baltimore), except no discount in New Jersey.

Southern District

STANDARD OIL CO. (KENTUCKY)

	Gasoline			Kero.
	Cons'r tank wag.	Net dlr.	Incl. tax	tank wag.
Atlanta, Ga.	16.5	16.5	7.5	10.0
Augusta	17.5	17.5	7.5	10.0
Macon	15.0	15.0	7.5	10.0
Savannah	16.5	16.5	7.5	9.0
Birmingham, Ala.	18.0	18.0	8.5	9.0
Mobile	18.0	18.0	9.5	8.0
Montgomery	18.5	18.5	9.5	10.0
Jackson, Miss.	16.5	16.5	7.5	9.5
Vicksburg	16.5	16.5	7.5	9.0
Jacksonville, Fla.	16.0	16.0	8.5	8.0
Miami	16.0	16.0	8.5	8.0
Pensacola	18.0	18.0	9.5	8.5
*Tampa	20.5	17.5	8.5	8.0
Lexington, Ky.	16.0	16.0	6.5	10.0
Covington	15.0	15.0	6.5	9.5
Louisville	15.0	15.0	6.5	9.0
Paducah	15.5	15.5	6.5	9.0

Price basis to tank-wagon consumers, effective January 4, 1937, 3 cents per gallon below tank-wagon price.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola, Fla., has a city gasoline tax of 1 cent. All are included in the table.

*Temporary discounts to tank-wagon consumers in Tampa 3 cents per gallon below consumer tank-wagon price on Crown gasoline.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline			Kero.
	Cons'r tank car	Dlr. tank wag.	Incl. tax	tank wag.
Albany	11.7	13.5	5.5	7.9
*Met. N. Y.: Manhat., Bronx, Queens, Brklyn., Staten Island	12.2	12.7	5.5	8.2
Buffalo	12.8	13.6	5.5	8.0
Rochester	13.3	14.2	5.5	8.5
Syracuse	12.7	13.9	5.5	8.7
Portland, Me.	11.7	13.8	5.5	8.0
Manchester, N.H.	12.4	12.5	5.5	8.8
Burlington	12.4	14.5	5.5	8.5
Boston, Mass.	10.8	11.8	4.5	8.3
Worcester	11.3	12.1	4.5	8.4
Hartford	11.0	12.0	4.5	8.1
New Haven	10.9	11.9	4.5	8.1
Providence, R. I.	10.7	12.2	4.5	8.3

*Does not include 2 per cent city sales tax, which is calculated on basis of net retail price exclusive of state and federal taxes. Metropolitan New York prices are undivided dealer prices; others are split dealer.

Effective February 15, 1939, the company changed its commercial consumer policy in New York and in New England points for tank-wagon delivery to the following: Annual purchases 10,000 gal. and under, tank-car price plus 2 cents per gallon; annual purchases 10,000 gal. up to 50,000 gal., tank-car prices plus 1.5 cents per gallon; annual purchases 50,000 to 200,000 gal., tank-car price plus 1 cent per gallon; annual purchases 200,000 gal. and over, tank-car price plus ½ cent per gallon. Private consumers pay undivided dealer price, plus 2 cents per gallon. Private consumers receiving full compartment deliveries of at least 200 gal. receive a discount of ½ cent per gallon.

Pennsylvania and Delaware

ATLANTIC REFINING CO.

	Gasoline			Kero.
	Cons'r tank car	Dlr. tank wag.	Incl. tax	tank wag.
Philadelphia, Pa.	12.5	14.0	5.5	10.5
Pittsburgh	13.5	15.0	5.5	10.5
Allentown	13.5	15.0	5.5	10.5
Erie	13.5	15.0	5.5	10.0
*Scranton	13.0	14.5	5.5	10.5
Altoona	13.5	15.5	5.5	10.5
Dover, Del.	...	14.5	5.5	10.5
Wilmington	...	14.0	5.5	10.0

Price basis to undivided dealers, dealer tank-wagon price less 0.5 cent per gallon.

Discount on kerosene, 2 cents per gallon off tank-wagon price on tank-wagon deliveries of 25 gal. or more at one time.

*Voluntary discount of 1 cent allowed to dealers only.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline			Kero.
	Tank truck	Serv. sta.	Incl. tax	tank wag.
San Francisco	16.5	17.5	4.5	11.5
Los Angeles	16.0	17.0	4.5	10.5
Fresno, Calif.	17.5	18.5	4.5	12.5
Phoenix, Ariz.	20.5	21.5	6.5	*17.5
Reno, Nev.	19.5	20.5	5.5	13.5
Portland, Ore.	19.0	20.0	6.5	13.5
Seattle, Wash.	19.0	20.0	6.5	13.5
Spokane	20.5	21.5	6.5	16.5
Tacoma	19.0	20.0	6.5	13.5

*Includes 5-cent state tax.

Discount to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents. To commercial consumers: On tank-wagon price; on single deliveries of 40 gal. and over, advance quantity discount extended at time of delivery, 3 cents. Service-station schedule applies on single deliveries less than 40 gal. On kerosene in tank-car, transport-truck, and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank wagon.

March 18, 1939, split dealer discount was canceled.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline			Kero.
	Tank wag.	Dlr.	Incl. tax	tank wag.
Denver, Colo.	13.5	...	5.5	10.5
Grand Junction	18.0	...	5.5	12.5
Pueblo	15.5	...	5.5	9.0
Casper, Wyo.	17.0	...	5.5	11.5
Cheyenne	14.5	...	5.5	11.0
Billings, Mont.	18.5	...	6.5	12.0
Butte	15.5	...	6.5	13.0
Great Falls	18.5	...	6.5	12.0
Helena	16.5	...	6.5	12.5
Salt Lake, Utah	16.0	...	5.5	14.0
Boise, Idaho	20.6	...	6.5	16.0
Twin Falls	21.6	21.6	6.5	16.5
Albu'que, N. M.	15.0	...	6.5	9.5
Roswell	14.0	14.0	7.0	8.0
Santa Fe	16.0	...	7.0	10.0

*Includes city tax of 0.5 cent. †Includes state tax of 1 mill.

Tank wagon represents price to consumers. Dealer represents price to dealers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline			Kero.
	Cons'r tank car	Dlr. tank wag.	Incl. tax	tank wag.
New Orleans, La.	14.25	16.75	8.5	†11.0
Baton Rouge	15.25	17.75	8.5	‡10.5
Alexandria	15.25	17.75	8.5	‡10.5
Lafayette	15.50	18.00	8.5	‡10.0
Lake Charles	15.25	17.75	8.5	‡10.0
Shreveport	14.00	16.50	8.5	‡9.0
Knoxville, Tenn.	18.50	20.00	8.5	12.5
Memphis	16.50	18.00	8.5	11.0
Chattanooga	18.00	19.50	8.5	12.0
Nashville	17.50	16.90	8.5	11.5
Bristol	18.75	18.00	8.5	12.0

Essolene at dealer price less 0.5 cent per gallon to undivided dealers.

†Includes 1-cent parish tax and 1-cent state tax. ‡Includes 1-cent state tax.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gal. or more in one territory take posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gal. at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less 0.5 cent per gallon. Kerosene prices include 1-cent state tax.

Effective February 24, 1939, the company reestablished in New Orleans the commercial consumer policy on motor fuel effective in the rest of the state.

Effective December 12, 1938, the company revised its commercial consumer policy on motor fuel in New Orleans, as follows: Single deliveries of less than 50 gal., consumer tank car plus 2 cents per gallon 50 to 199 gal., consumer tank car plus 1 cent per gallon; 200 gal. and over, consumer tank car plus 0.5 cent per gallon.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline		Kero.
	Tank wag.	Incl. tax.	tank wag.
Texarkana, Ark.	13.5	5.5	7.0
Fort Smith	15.0	5.5	8.0
Little Rock	17.25	8.0	8.0
Muskogee, Okla.	13.0	5.5	7.0
Oklahoma City	11.5	5.5	6.5
Tulsa	12.5	5.5	6.0

Tank wagon represents price to consumers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline			Kero.
	Tank wag.	Dlr.	Incl. tax	tank wag.
Omaha	17.0	15.9	6.5	9.0
McCook	17.5	14.4	6.5	9.5
Norfolk	17.5	15.4	6.5	9.9
North Platte	17.8	15.0	6.5	10.2
Scottsbluff	18.4	15.5	6.5	10.5

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective January 1, 1935.

Texas

	Gasoline			Kero.
	Tank wag.	Dlr.	Incl. tax	tank wag.
Dallas, Tex.	11.5	15.5	5.5	6.0
Fort Worth	11.5	15.5	5.5	7.0
Houston	12.0	16.0	5.5	8.0
San Antonio	12.5	17.0	5.5	8.0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank wagon*
Oleum spirits	16.2
V.M.&P. naphtha	16.5
Cleaners' naphtha	15.5
Stanisol	15.5

*Prices include 3-cent Illinois tax but not 1-cent federal tax nor 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gal. lots if covered by contract.

Canada

3-Star Imperial Gasoline
IMPERIAL OIL, LTD.

	Gasoline		Kero.
	Tank wag.	Incl. tax.	tank wag.
Halifax, N. S.	24.5	10.0	18.0
St. John, N. B.	24.5	10.0	18.0
Montreal, Que.	24.0	8.0	16.5
Toronto, Ont.	24.0	8.0	16.5
Hamilton, Ont.	24.0	8.0	16.5
Winnipeg, Man.	27.0	7.0	21.5
Brandon, Man.	28.0	7.0	22.5
Regina, Sask.	25.0	7.0	20.0
Saskatoon, Sask.	28.0	7.0	23.0
Edmonton, Alta.	25.9	7.0	20.0
Calgary, Alta.	23.0	7.0	18.0
Vancouver, B. C.	21.0	7.0	23.0

Tank-Wagon Changes

Effective July 8, Standard Oil Co. of New Jersey reduced the dealer tank-wagon gasoline price at Raleigh, N. C., 0.5 cent.

Effective July 2, Standard of New Jersey reduced tank-wagon fuel oil prices 0.5 cent throughout Maryland, Delaware and District of Columbia. Effective June 25, Continental Oil Co. advanced gasoline prices 1 cent in Colorado. Effective July 27, Continental raised Montana gasoline 1 cent and on June 29 advanced Oklahoma 1 cent.

On July 2, Standard of New Jersey reduced kerosene tank-wagon prices 0.5 cent at Danville, Norfolk, Petersburg and Richmond, Va.

Standard Oil Co. (Indiana) raised the dealer tank-wagon price on gasoline 1 cent per gallon at Des Moines, Iowa, July 3.

Standard Oil Co. of Nebraska increased dealer gasoline price at Omaha a half cent per gallon July 12, making the new quotation 15.9 cents.

Prices of Refined Products

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of July 16, 1940

The quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents a gallon on lubricating oils. Octane ratings in Middle West, Mid-Continent, and Southwest are based on A.S.T.M. method of testing.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.04⅝	.04¾
63-66 octane	.04⅛	.04¼
60 octane and below	.03¾	.03⅞
60-62 400 grades:		
72-74 octane (regular)	.04⅝	.04¾
63-66 octane	.04⅛	.04¼
60 octane and below	.03¾	.03⅞

NORTH TEXAS—

U. S. Motor grades:		
72-74 octane (regular)	.04⅝	.04¾
63-66 octane	.04⅛	.04¼
60 octane and below	.03¾	.03⅞
60-62 400	.03¾	.03⅞

NORTH LOUISIANA (Ark. and N. La. delivery)—

U. S. Motor grades:		
72-74 octane (regular)	.05⅛	.05⅜
63-66 octane	.04⅝	.04⅞
60 octane and below	.04¼	.04½

ARKANSAS (Ark. and N. La. del.)—

U. S. Motor grades:		
72-74 octane (regular)		.04¾
60 octane and below		.04

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.04¾	.04⅞
63-66 octane	.04⅜	.04½
60 octane and below	.04	.04⅛
60-62 400 grades:		
72-74 octane (regular)	.04¾	.04⅞
63-66 octane	.04⅜	.04½
60 octane and below	.04	.04⅛

PENNSYLVANIA (inland refineries)—

74-76 octane (regular)	.06	.06⅛
72-74 octane		.05⅝

CALIFORNIA (domestic movement)—

58-60 400, 65 oct. and higher	.06¼	.07¼
54-58 U. S. Motor	.05	.06⅛

EAST COAST (domestic)—

U. S. Motor grades:		
New York (Bayonne)*	.06	.06⅛
Philadelphia	.06	.06⅜
Boston	.05⅝	.06
Baltimore	.06⅛	.06⅛
Charleston, S. C.	.06¼	.06⅛

*All grades of gasoline ⅛ to ¼ cent less for barge shipments. New York harbor prices are for New York and New England delivery. Prices for New Jersey delivery ⅛ cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
72-74 octane	.04⅛	.04¼
70-72 octane	.04	.04⅛
68-70 octane	.03⅞	.04
65-67 octane	.03¾	.04

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.01⅛
Grade 18-55	.01⅜	.01⅝

NORTH TEXAS—

Grade 26-70		.01¼
Grade 18-55		.01⅛

CALIFORNIA—

75-85 375-390	.05¼	.05⅜

NORTH LOUISIANA (Ark. and N. La. delivery)—

Grade 26-70		.01⅜

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 l.b.p., 110-flash, 540-550 e.p.	.03⅝	.03⅝
41-43 gr., 300-320 l.b.p., 110-125 flash, 500-520 e.p.	.03¾	.03⅞
46-48 gr., 210-230 l.b.p., 480-max., e.p.	.03⅞	.04

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

42-44	.03⅞	.04
41-43	.03¾	.03⅞

NORTH TEXAS—

41-43	.03¾	.03⅝

NORTH LOUISIANA (Ark. and N. La. delivery)—

41-43	.03⅞	.04

ARKANSAS (Ark. and N. La. del.)—

41-43		.04¼

PENNSYLVANIA (inland refineries)—

47	.05⅛	.05¼
46	.05	.05⅛
45	.04¾	.04⅞

CHICAGO (Based on Group 3)—

42-44	.04	.04⅛
41-43	.03⅞	.04

CALIFORNIA (Pac. Coast market)—

38-43 high burning test	.04½	.05½

NEW YORK (Bayonne, N. J.)—

41-43	.051	0.53

GULF COAST (domestic)*—

41-43	.04¼	.04⅜

*Barge price ⅛ cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

Range oil	.03½	.03⅝
No. 1 prime white, 38-42	.03⅝	.03½
No. 1 straw, 38-40		.03⅜
No. 2 straw, 32-36	.03¼	.03⅜
No. 3 zero to 10, 28-32	.03⅛	.03¼

NORTH TEXAS—

No. 1 prime white, 38-42		.03½
No. 1 straw, 38-40		.03⅜

NORTH LOUISIANA (Ark. and N. La. delivery)—

No. 2, 32-36	0.3	.03½

ARKANSAS (Ark. and N. La. del.)—

No. 2, 32-36	.03¼	.03½

CHICAGO (Based on Group 3)—

Range oil	.03⅝	.03¾
No. 1 prime white, 38-40	.03½	.03⅝
No. 2 straw, 32-36	.03¼	.03⅜
No. 3, zero to 15, 28-32	.03⅛	.03¼

NEW YORK (Bayonne, N. J.)—

*No. 1	.051	.053
*No. 2	.044	.047
*No. 4	.044	.047

Barge deliveries ⅛ to ¼ cent under above tank-car price.

Gas Oil and Fuel Oil

(Gas oil per gal., fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil, under 35	.02⅝	.02¾
No. 5, low pour point, 18-22	.72½	.77½
No. 6, 15 and above, 8-14	.50	.55

NORTH TEXAS—

U.G.I. gas oil, under 35	.02⅝	.02¾
No. 5, low pour point, 18-22	.72½	.77½
No. 6, 15 and above, 8-14	.50	.55

NORTH LOUISIANA (Ark. and N. La. delivery)—

10-14 fuel oil, industrial	.65	.70

CHICAGO (Based on Group 3)—

U.G.I. gas oil	.02⅝	.02⅞
No. 5, low pour point, 18-22	.75	.80
No. 5, 15 and above, 18-22	.60	.70
No. 6, low pour point, 10-16	.60	.70
No. 6, 15 and above, 10-16	.45	.55

PENNSYLVANIA (inland refineries)—

36-40		.04

CALIFORNIA—

Los Angeles:		
30-40 gas oil, per bbl.	1.10	1.25
24 plus diesel, per bbl.	1.10	1.25
24 plus diesel (bunkers)	1.20	1.35
12-16 (bunkers at tidewater)	.65	.75
10-16 (cargo lots)	.65	.75
12-17 (tank cars)	.60	.75
10-17 (high sulfur)	.50	.65
San Joaquin Valley:		
10-18 (tank cars)	.50	.70
24 plus diesel, per bbl.	1.10	1.25
San Francisco:		
24 plus diesel, per bbl.	1.35	1.40
24 plus diesel (bunkers)	1.40	1.50
10-16 (bunkers)	.80	.85

GULF COAST*—

No. 2 fuel	.03⅛	.03½
43-47 diesel	.03	.03¼
48-52 diesel	.03¼	.03½
53-57 diesel	.03½	.03¾
58-and-above diesel	.03¾	.04
Diesel bunkers		1.50
Bunker C (bulk cargoes)	.80	.85
Bunker C (bunkers)		.80

NEW YORK (Bayonne, N. J.)—

27 plus, gas oil	.04½	.05
28-30 diesel (lighterage 6¼c per bbl.)		1.80
28-30 diesel (tank cars)	.04½	.05
Bunker C (to ocean-going ships in N. Y. Harbor)		1.35
Industrial fuel (tank cars)	.035	.038

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

200-210 D, 10-25		.19
150-160 D, 0-10		.15
150-160 D, 10-25		.14½
100-110 D, 0-10		.14½
100-110 D, 10-25		.14
Steam refined:		
600 dark green (untreated)		.07

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour point	.16½	.17½
15 pour point	.15½	.16½
25 pour point	.14	.16
Steam refined:		
600	.09	.10
650	.11	.12
600 flash	.12	.13
630 flash	.14	.15

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

0-10 pour point:		
150-3		.08
180-3		.09
200-3		.09½
250-3		.10½
280-3		.11
280-4		.10½
300-3½		.11½
350-3½		.12
400-3½		.12½
500-3½		.13½
600-3½		.14½
100-2½ paraffin oil, 10-25		.05¼
10-25 pour point:		
200-3		.09
250-3		.10
280-3		.10⅛
280-4		.10

GULF COAST—

Pale oils:		
100-3	.05½	.05¾
200-3	.07¼	.07½
300-3	.07¾	.08
500-3½	.08½	.09
750-3½	.09	.09½
1,200-3½	.09¾	.10
2,000-4	.10	.10¼
3,000-4	.12¼	.12½
Red oils:		
200-5-6	.07	.07¼
300-5-6	.07½	.07¾
500-5-6	.08¼	.08⅝
750	.08⅝	.09¼
1,200-5-6	.09⅝	.09⅝

CALIFORNIA (moving to dom. market)—

Pale oils:		
100-2½-3	.07¼	.08
200-2½-3	.07¼	.08
300-2½-3	.07¼	.08
400-3-4	.07¼	.08
450-3-4	.07¼	.08
550-3-4	.09	.11
600-3-4	.09	.11
Red oils:		
200-4-5	.07¼	.08
300-5-6	.07¼	.08
350-5-6	.09¼	.11½
400-5-6	.09¼	.11½
450-5-6	.09¼	.11½
500-5-6	.09¼	.11½
600-5-6½	.09¼	.11½
700-6½ plus	.09¼	.11½
750-6½ plus	.09¼	.11½
900-6½ plus	.09¼	.11½

PENNSYLVANIA—

150 vis. at 70° F., 3 color, 400-405 flash:		
Zero pour point		.22½
10 pour point		.21½
15 pour point		.20½
25 pour point	.19	.20
200 vis. at 70° F., 3 color:		
Zero pour point		.24½
10 pour point		.23½
15 pour point		.22½
25 pour point	.21	.22

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (A.m.p.) w.c. scale	.03½	.03¾

PENNSYLVANIA (inland refineries)—

122-124 (A.m.p.) w.c. scale	.03	.03½
124-126 (A.m.p.) w.c. scale	.03	.03½

NEW YORK—

Wax in bags fully refined:		
125-127 (A.m.p.) wax	.056	.060
128-130 (A.m.p.) wax	.057	.060
130-132 (A.m.p.) wax	.058	.062
133-135 (A.m.p.) wax	.062	.065
135-137 (A.m.p.) wax	.064	.067
Crude scale:		
124-126 (A.m.p.) w.s.	.03	.03¼
124-126 (A.m.p.) y.s.	.03	.03¼
Petrolatum in barrels, carload lots:		
Dark green		.02625
Amber	.02375	.02875
Extra amber	.02625	.03000
Lily white	.04375	.05000
Snow white	.05125	.06000
Cream	.03625	.04125

Export Prices

GASOLINE

GULF COAST—

U. S. Motor		.04
60-62 400	.04	.04½
61-63 390	.04	.04½
64-66 375	.04	.04⅝

LOS ANGELES—

U. S. Motor grades:		
Above 69 octane	.06¼	.06½
65-69 octane	.05¾	.06¼
60-65 octane	.05¼	.05¾

KEROSENE

GULF COAST—

41-43 water white	.04	.04⅛

LOS ANGELES—

41-43 water white	.05	.05¼

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.a.s in bbl.)—

Cylinder stocks:		
600 S.R. unfiltered	.16½	.17½
630 S.R. unfiltered	.17½	.18½
600 flash, S.R.	.18½	.19½
650 flash, S.R.	.21	.22
Bright stock:		
Light, 25 pour point	.22	.23

NEUTRAL OIL

200-3 color	.27	.28
150-3 color	.25	.26

PARAFFIN WAX

NEW YORK (prices per pound)—

123-125 A.m.p.		.05⅞
125-127 A.m.p.		.06
128-130 A.m.p.		.06¼
133-135 A.m.p.		.07
135-137 A.m.p.		.07¼
Crude scale:		
124-126 w.s.	.03	.03¼
124-126 y.s.	.03	.03¼

EQUIPMENT PROGRESS...

Lubricating Oil Supplied at Uniform Pressure by Durametallic Unit

The Durametallic Oil-Pressure Unit, introduced by the Durametallic Corp., 2104 Factory Street, Kalamazoo, Mich., is designed to meet the need for a complete

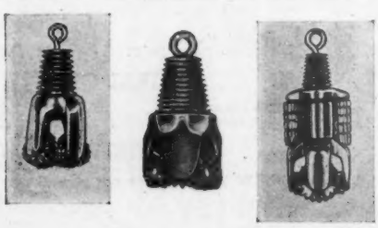
compact unit to supply lubricating oil at a uniform pressure. It is said to provide a dependable service for circulating lubricating oil through lantern glands of stuffing boxes, also through stuffing boxes packed with Double Dura Seal. Additional applications of this pressure unit include circulation of oil through large bearings, supplying of oil to hydraulic equipment, and to heat-treating systems, or where there is the problem of circulating or supplying oil at a uniform pressure.

Other fluids may be handled such as soluble oil emulsion, fuel oil, kerosene, gasoline, naphtha, and the like, but at lower pressures than the lubricating oil.

The heart of this unit is the Durametallic pressure regulator, of an improved design. Its ability to maintain circulation at desired pressures with minimum fluctuation is said to have been proved by laboratory tests and field operations. The regulator can be adjusted by hand.

New Miniature Rotary Bits in Line of Oil Men's Jewelry

Recent additions to the line of miniature oil-tool jewelry made by the J. B. Walker Manufacturing Co., Los Angeles, Calif., include the three watch-charm rotary-bit models illustrated here in actual size. These



reproductions of real drilling tools are complete and accurate to the minutest detail; the bearings in the bits are machined to less than 0.001 tolerance and the heads formed under 24,000 lb. pressure. They are made in either chrome finish or 14-k. gold plate. This company, headed by J. B. Walker, a practical oil man with over 30 years of field and oil-tool experience, also manufactures miniature rotary reamers, kelly joint or drill-pipe tie holders with choice of rotary bit or reamer attached, and small reproductions of any oil-field equipment desired.

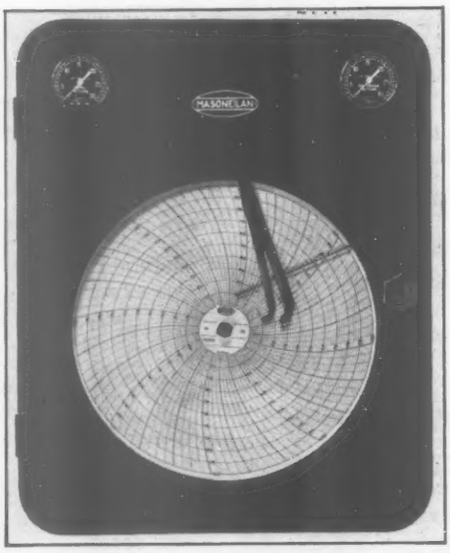
Medart Buys Reeves Pulley Stock

The Medart Co., St. Louis, Mo., has purchased the entire wood pulley stock of the Reeves Pulley Co. and also all good will pertaining thereto. It purchased not only the factory stock at Columbus, Ohio, but all branch warehouse stocks of the Reeves company. The Medart company will continue to maintain a complete master stock of wood split pulleys in St. Louis, and will serve all of the wood pulley dealers and customers of the Reeves company. The latter company discontinued the manufacture of wood split pulleys on July 1.

Mason-Neilan Offering Devices for Indicating, Recording, Control

Mason-Neilan Regulator Co., Boston, Mass., has announced new mechanical refinements and restyled cases in its line of indicating, recording, and control instruments.

Improvements include a more compact, faster amplify

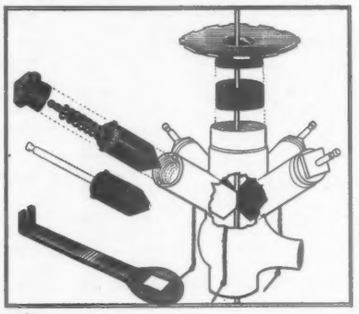


ing pilot of high capacity; rearrangement of control assemblies so that all working parts, including gages, may be installed or removed as a unit; die-cast aluminum cases streamlined and finely proportioned, styled in accordance with advanced mechanical features and the modern trend in instrument panel layout; a new-type lock, insuring a permanently tight door; time-set pointer; rigid aluminum chart plate; airplane-type nonglare gage dials; straight-line, high visibility indicating scale.

Practical, performance-tested features introduced by Mason-Neilan 5 years ago—such as universality of control assemblies; interchangeability of standard parts; adaptability to practically any control application; complete adjustability without disturbing chart record or interrupting the control—are retained.

Webb Rod Stripper and Oil Saver Affords Safety and Cleanliness

The Glenn E. Breeding Co., Key Building, Oklahoma City, Okla., announces the Webb rod stripper and oil saver for use in pulling rods and saving oil, adding



cleanliness and safety to the operation. This device mops oil and paraffin from the rods as they are pulled from the well and carries them into a barrel placed under the outlet. By use of an extesion pipe, this oil and paraffin may be carried into a pit adjacent to the well.

The appliance prevents the oil and paraffin from spraying over the machinery, derrick floor, and men.

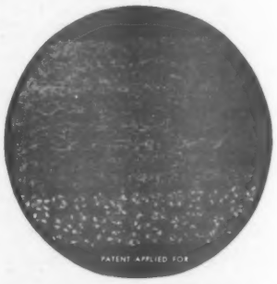
It is said to save at least 3 hours man time and 1 hour pulling-machine time plus the time and cost of cleaning up after the pulling job.

It provides cleaner working conditions and reduces hazards to the men working around the well. It is quickly and easily installed and simple to operate.

The only wearing parts are the rubber plugs that grip the rods. These plugs have two wearing surfaces and may be used on 30 to 50 wells.

Standco's New-Type Brake Blocks Reduce Scoring of Brake Rims

The need for a nonscoring woven brake block without metallic content has been apparent since the advent of deep-drilling operations, when heavy braking loads resulted in severe scoring of brake rims. The Standco Brake Lining Co., Clinton Drive, Houston, Tex., specializes in the manufacture of oil-field brake blocks of the woven type only.

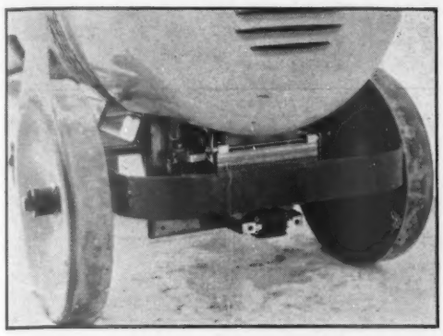


The new nonmetallic brake block (patent applied for) has a woven-wire reinforcement, woven into the brake lining during the manufacturing process, in only about one-fourth of the thickness of the brake blocks. This is just sufficient for the flat-head brass screws to get a strong hold, eliminating the possibility of scoring the rims. The wire reinforcement thus prevents the brake lining from working loose on the screws.

Gulf Coast and California contractors and producers have been testing these woven brake blocks for 10 months, establishing for the manufacturers the records upon which claim is based that 90 per cent of the scoring of brake rims was eliminated, and at the same time the life of the blocks and rims was increased. In no instance have the holding screws become loose, according to the manufacturers.

Automatic Start-and-Stop Device Designed to Eliminate Waste

In an effort to eliminate the waste incurred through frequent idling of an arc welder between jobs, Wilson Welder & Metals Co,, Inc., 60 East Forty-second Street,



New York, has put on the market an automatic start-and-stop device. It is for use on any magnetic-starter, motor-generator arc welder, such as the Wilson Hornet, which is driven by an a.c. motor.

With this Wilson device, the operator starts the welding unit simply by touching the work with his electrode holder. As long as he is welding, the unit keeps running; when welding is interrupted, the machine automatically stops after a time delay which may be set at ½ to 1½ minutes, to suit the conditions of the particular job. The time delay prevents undesirable frequent stoppings in case of a tacking job. The standard device is reconnectable for 220 or 440 volts, or it may be supplied for other a.c. voltages (60 cycles only).

Johnston's Mud-Weight Indicator Shows Density While Drilling

M. O. Johnston Oil Tools, Inc., 3117 San Fernando Road, Los Angeles, Calif., has announced the Johnston mud-weight indicator, which continuously indicates on an easily read dial in pounds per cubic foot the density of rotary mud while drilling. Readings on the dial can be made to within ¼ lb. If desired, the unit can be furnished calibrated for wider weight ranges than regularly supplied (62.4 to 90 lb. per cu. ft.). It is also available calibrated in either the metric system or in pounds per gallon.

By giving accurate readings of mud weight at all

times, this instrument assures greater safety and efficiency in all types of drilling, because it instantly notifies the driller when dangerous weight changes occur. The instrument can be used with equal efficiency to measure continuously the density of cement slurry being mixed for cementing operations. For this purpose the instrument is furnished calibrated to weigh slurries from 80 to 130 lb. per cu. ft.

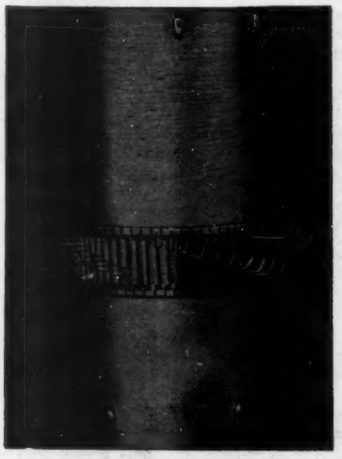
The Johnston indicator operates on a principle whereby a small power coil, electrically operated, induces a vibration in a unit consisting of an output coil, a reed, a reed mount, and a paddle.

The Johnston indicator mounts directly on the side of the mud ditch or adjacent to the screen. The indicating gage may be mounted on the instrument panel in front of the driller, or at any other point desired.

Uniform Cement Distribution Gained By B. & W. Wall-Cleaning Guide

Uniform cement distribution around the casing is required to separate gas, oil, and water-bearing sands, and in addition the mud cake should be removed from the wall of the hole so that the cement is in bond with the formation.

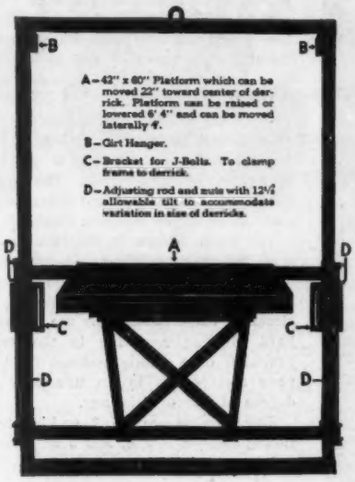
The wall-cleaning guide illustrated, manufactured by B. & W., Inc., 3545 Cedar Avenue, Long Beach, Calif., combines a centering action with a means for removing the mud filter cake and is installed on the casing opposite shale sections above and below produc-



tive sands so that movement of the casing during the cementing operation will remove the mud cake and enable the cement to be distributed uniformly behind the casing. Where blank casing is to be cemented over productive sands or as a protective string to prevent gas blowouts the wall-cleaning guides provide means for obtaining proper cement distribution around the lower casing joints. Recent investigations have shown the need for mechanical abrasion of the well bore to obtain mud removal during the cementing and completion operations.

Working Platform of Monkey Board Adjustable in Three Directions

MacClatchie Manufacturing Co., Compton, Calif., has announced development of an adjustable monkey board with rack for use in oil derricks. It can be installed


B
B
A – 42" x 60" Platform which can be moved 22" toward center of derrick. Platform can be raised or lowered 6' 4" and can be moved laterally 4'.
B – Girt Hanger.
C – Bracket for J-Bolts. To clamp frame to derrick.
D – Adjusting rod and nuts with 12½° allowable tilt to accommodate variation in size of derricks.
D
A
D
C
C
D
D

in 10 minutes and can be moved from one location to another wtihout dismantling. Adjustable in three directions, the working platform can be moved 22 in. toward the center of the derrick, raised or lowered 6 ft. 4 in., and moved laterally 4 ft. to suit the convenience of the derrick man. The frame is adjustable to any tilt desired in different types of derricks.

Rugged steel construction has been used at all points in the frame to assure safety and rigidity. The unit is furnished completely set up and ready for installation. Wood flooring is standard equipment unless otherwise ordered.

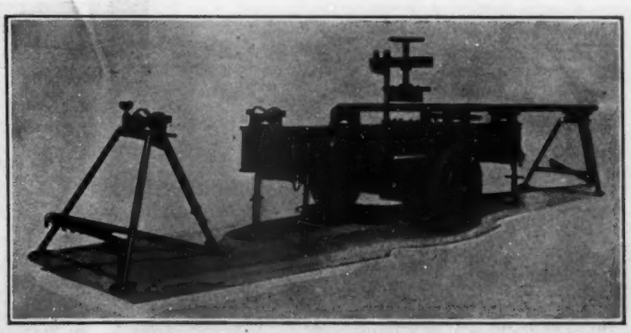
Collins to Assistant Manager

Promotion of C. Phillip Collins as assistant general manager is announced by Eastman Oil Well Survey Co., Dallas, Tex. Mr. Collins has been manager of the Houston, Tex., office, but is being transferred to Dallas, where he will assist Ray F. Bolton with operations in the Gulf Coast, Mid-Continent and eastern fields. Al G. Pabst, formerly in the Dallas office, has been promoted to the position vacated by Mr. Collins in the Houston office.

BENT OR KINKED PIPE MAY BE STRAIGHTENED AT THE WELL

A portable pipe straightener introduced by Shaffer Tool Works, Brea, Calif., provides a means of straightening bent or kinked pipe at the well. The device, hydraulically operated, is mounted on springs attached to the axle, and it is equipped with a trailer hitch so that it may be drawn by an ordinary small truck. The assembly is carried on automobile tires and its entire construction makes it easy to transport to and from different wells on a lease, or to wells scattered over a wide area and for wildcat operations.

The Shaffer portable pipe straightener is power-driven and is equipped with a ¾-hp. a.c. or d.c. reduction-gear motor. Gasoline, gas, or butane motors can also be furnished if operating conditions make it necessary to utilize such power. The hydraulic power is supplied by an 8-in. diameter hydraulic ram actuated by a double-piston pump with ¾-in. pistons and 4-in. stroke operating at 125 r.p.m. The ram is controlled by a valve and when the pressure is released the return is made by heavy coil springs. Oil used for fluid, is kept in a reservoir chamber. The oil



supply is always ready for use and there is no loss of fluid during operations.

The straightener has a side opening on the ram bracket which makes it possible to roll pipe on and off the machine.

Reduction of Fluid Slippage Raises Efficiency of New Pacific Pump

Pacific Pump Works, Los Angeles, Calif., has introduced a new metal-to-metal seal design pump engineered on the Pacific principle of maximum passages for unrestricted fluid flow. This new Metallo-Seal pump utilizes the Pacific Maloy liner metal for an effective seal as a plunger in a specially finished precision tube.

Pacific Maloy plungers are said to have proved their antifrictional and wear-resistant qualities over a period of years. Their resistance to galling is considered of paramount importance. The Metallo-Seal pump represents the metal-to-metal seal design in its simplest form.

The pump shown in the illustration is the rod-traveling type with three-cup holddown, but any A.P.I. holddown or locking means may be employed. The closer fit made possible by the Molay XX hard plunger operating in the smooth precision tube greatly reduces fluid slippage and results in an unusually high degree of pump efficiency.

Plunger sizes are 1½, 2, and 2½ in. for tubing sizes of 2, 2½, and 3 in. in standard lengths.

Ductiloy Name Changed

The special low-alloy steel known to the trade as Ductiloy will henceforth be marketed under the trade name of N-A-X High Tensile, it is announced by National Steel Corp. The alloy is a product of Great Lakes Steel Corp., Detroit, Mich., unit of National Steel Corp. The high tensile, high ductile alloy was developed by Great Lakes engineers to meet demands for a steel combining cold forming and deep drawing properties and weldability with the added strength and resistance to corrosion and abrasion provided by alloyed mild steel. The product has unusually high resistance to impact and fatigue, it is stated, and has been used successfully in difficult applications where other high tensile steels have failed. In announcing the change in the trade name, the company states that the step is being taken to identify more closely the name of this alloy steel with the corporate name of the parent company. Under the new trade name, there will be no change in the chemical or physical properties of the product.

TRADE LITERATURE

EASTMAN OIL WELL SURVEY CO., Dallas, Tex., and Long Beach, Calif.—Bulletin No. 401, giving description and instructions for operating Type M drift indicator.

A. A. DOERR MERCANTILE CO., Larned, Kans.—General catalog, steel tanks and centrifugal pumps.

LANE-WELLS CO., Los Angeles, Calif.—Bulletin on packers, liner hangers, and bridging plugs; description of application of packers are given with tables of sizes, weights, parts, and diagrams.

ACTIVATOR PROCESS SALES CO., Alhambra, Calif. Bulletin describes the activator process and its application for preventing scale in the generation of steam; also use of the process for scale prevention in cooling towers, water jackets, piping, etc.

LINK-BELT CO., Chicago.—Catalog No. 1845; a 12-page bulletin on the company's complete line of flexible couplings with information of revolving and stationary casings and a horizontally split aluminum casing.

BLACKHAWK MANUFACTURING CO., Milwaukee, Wis.—Book No. 40H, on hydraulic hand jacks, wheeled floor jacks, high-pressure valves and hydraulic tools.

FAIRBANKS, MORSE & CO., Chicago.—Bulletin 5135, Fairbanks-More Fig. 5135 rotary pumps.

TULSA SHOCK ABSORBER CO., INC., 714 South Boston Avenue, Tulsa, Okla.—Bulletin on Tulsa shock absorbers for reducing rod breakage and damage to front equipment.

BRODERICK & BASCOM ROPE CO., 4203 North Union Boulevard, St. Louis, Mo.—96-page riggers' handbook, with all information brought up to date and illustrations of new slings added.

THE BRIDGEPORT MACHINE CO., Wichita, Kans.—Current number Bridgeport Bulletin, featuring realignment of Bridgeport's activities.

WHEELCO INSTRUMENTS CO., 1929 South Halsted Street, Chicago.—Bulletin G2000-4, Wheelco Thermotrol; Bulletin S2-2, Wheelco thermocouples, thermocouple wire, lead wire, insulators, protecting tubes.

JOSEPH T. RYERSON & SON, INC., Sixteenth and Rockwell Streets, Chicago.—Thumb-indexed stock book of Ryerson steels, 256 pages.

ECLIPSE AIR BRUSH CO., INC., 390 Park Avenue, Newark, N. J.—Catalog 77, spray equipment for manual and automatic operation.

THE ESTERLINE-ANGUS CO., Indianapolis, Ind.—Bulletin 839, Esterline-Angus graphic wattmeters.

DRESSER MANUFACTURING CO., Bradford, Pa.—Bulletin on new Style 83 casing bushing for making quick closures between casing and pipe.

CRANE CO., 836 South Michigan Avenue, Chicago.—306-page catalog illustrating and describing the complete Crane line of steel valves and fittings. Also May-June issue of Valve World.

CHAS. J. FRANKS, INC., 416 South Kenosha Avenue, Tulsa, Okla.—Looseleaf catalog positive-type engine coolers and related oil-field equipment.

DRY-ZERO CORP., 222 North Bank Drive, Chicago.—Bulletin describing "pre-tensed" buildings made by the Lindsay Structure method of combining steel sheets and framing.

THE INTERNATIONAL NICKEL CO., 67 Wall Street, New York.—16-page reprint from American Machinist, "The Working of S.A.E. Nickel-Alloy Steels."

CLIMAX MOLYBDENUM CO., 500 Avenue, New York.—Current number Moly Matrix, featuring article telling how cast chromium-molybdenum steel is used for a variety of parts in haulage equipment.

HOMESTEAD VALVE MANUFACTURING CO., Coraopolis, Pa.—Bulletin, Homestead valves; bulletin, Hypressure Jenny Steam Cleaners.

A. O. SMITH CORP., Milwaukee, Wis.—28-page booklet, "How to Save on Casing With Safety."

REPUBLIC STEEL CORP., 3100 East Forty-fifth Street, Cleveland, Ohio.—Four booklets on Enduro stainless and heat-resisting steels: "Republic Enduro Stainless and Heat-Resisting Steels," Form ADV 361; "Enduro, 18-8 Types," Form ADV 362; "Enduro, Types AA, AA-FM, S-1 and FC," Form ADV 363; "Enduro, Types HCN, NC-3 and HC," Form ADV 364.

WYATT METAL & BOILER WORKS, Houston and Dallas, Tex.—May-June issue The Wyatt Way, featuring an article on permanency in linings of corrosion-resistant steel.

BELMONT PACKING & RUBBER CO., Philadelphia, Pa.—Packing catalog, designed to make packing selection simple.

LEEDS & NORTHRUP CO., 4901 Stenton Avenue, Philadelphia, Pa.—Broadside N-33, "Micromax and Other L&N Pyrometers."

BYRON JACKSON CO., Los Angeles, Calif.—Pump Division News Letter, devoted to a device to replace time-delay relay for submersible and deep-well turbine pumps.

Edkins and Putnam Join Oil City

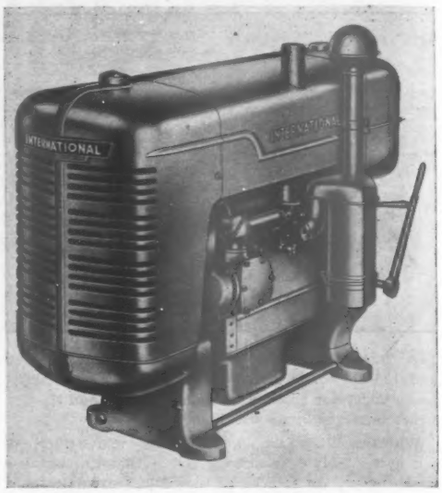
The Oil City Brass Works of Beaumont, Tex., has appointed Paul Edkins sales representative in Oklahoma and Kansas, and R. B. (Red) Putnam as representative in Louisiana, Mississippi, and Arkansas. Mr. Edkins will maintain an office in the Thompson Building, Tulsa, having been a resident of that city since 1925, during which time he has been engaged in the sale of oil-well supplies. For the past several years Mr. Putnam has been with the Frick-Reid Supply Corp. in the capacities of field salesman and storage manager of various points on the Texas and Louisiana Gulf Coast.

R. B. PUTNAM

PAUL EDKINS

International Harvester Announces Two New Gasoline Power Units

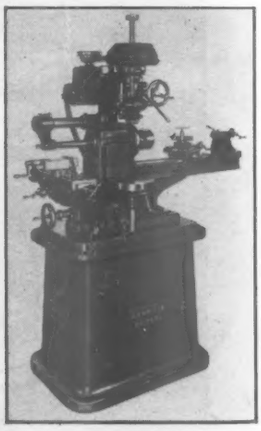
International Harvester Co., Chicago, which last January put on the market a four-cylinder 22-hp. gasoline-power unit, the Model U-2, now announces two new gasoline models. One is the four-cylinder, 31.5-hp. Model U-4 and the other the four-cylinder 41-hp. Model U-6.



Both the U-4 and U-6 are of valve-in-head design, have replaceable cylinder sleeves, efficient combustion control, replaceable precision-type bearings, Tocco-hardened crankshafts, and efficient pressure lubrication. Maximum horsepower for the U-4 and U-6 are 31.5 and 41 at governed speeds of 1,800 and 1,500 r.p.m., respectively. The bore and stroke of the U-4 are respectively 3⅜ and 4¼ in.; of the U-6, 3⅞ and 4¼ in. Piston displacement of the U-4 is 152.1 cu. in. and of the U-6 247.7 cu. in. The U-4 is 54¾ in. long, 23 7/8 in. wide and 40 in. high and it weighs approximately 920 lb. The U-6 is 62 7/8 in. long, 25⅝ in. wide and 50¾ in. high and it weighs approximately 1,400 lb.

Hannifin Tool-Room Unit Combines Four Efficient Machines in One

The Hannifin No. 10 tool-room machine, introduced by Hannifin Manufacturing Co., 621 Kolmar Avenue, Chicago, combines in one compact, efficient unit a precision lathe, sensitive drill press, horizontal milling machine, and vertical milling machine. The usefulness of four standard tool-room machines is provided in this one versatile machine. In addition to convenient handling of regular tool-room work, the Hannifin No. 10 may be used for economical production of many kinds of parts manufactured in small quantities.



The lathe is a modern, precision tool-room lathe, with rigid lathe bed mounted on a heavy base. The tail stock has ground gibs on all bearing surfaces for takeup in any direction. The senstive drill press is designed for sustained accuracy and has simple, easily accessible controls for rapid and economical work. The horizontal milling machine is a precision-built unit designed for easy handling and adapted to all classes of tool-room work. The ball-bearing spindle is hardened and ground chrome-nickel steel. The vertical milling machine is adapted to accurate handling of a complete range of work.

The machine can be arranged for screw cutting with quick-change gear box, which also provides power feed for the saddle. The capacity length of thread is 18 in.

Improved Roller Rod-Line Carrier Is Streamlined

The Sisk Co. of Wichita Falls, Tex., has announced an improved roller rod-line carrier (No. 7) of pleasing streamline design. The sheave wheel has an extra deep groove accommodating up to 1-in. pull rods. The "railroad track" groove design carries any size pull rod on two sides in a true rolling movement. The hub is filled with special bearing lubricant which does not require replenishing due to the permanent-type grease seals used. To prevent any chance of binding from either radial or thrust loads, the sheave wheel is carried on two deep-groove ball bearings equipped with labyrinth-type grease seals for complete isolation of the bearings. A simple stake lock, applied without tools, is provided in the shank to secure the carrier from wobbling and turning in the stake. An ice-shedding finish, applying the principle used on airplane wings, is available on special order.

Production From Different Zones Segregated by Baker Packer

Baker Oil Tools, Inc., 6000 South Boyle Avenue, Los Angeles, Calif., has developed a retainer production packer to pack off between two production horizons and produce them separately. When production from three zones is to be kept separate, an additional packer is used. The packer is furnished in three designs, continuous double-seal, continuous single-seal, and packing-head seal.

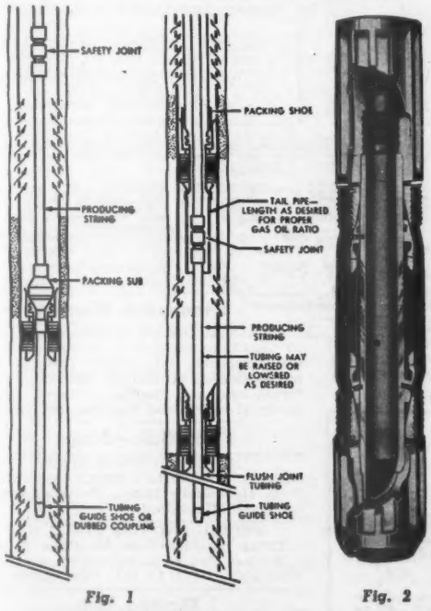


Fig. 1 *Fig. 2*

Fig. 1—Left, two-zone production method, using retainer production packer, packing-head seal type. Right, three-zone production method, using a packing-head seal type and a continuous double-seal type Baker retainer production packer. Fig. 2—Sectional view of Baker retainer production packer, continuous double-seal type

All three types are of the same basic construction, but with individual features providing for raising and lowering the tubing to regulate flow and gas-oil ratios, to clean out sand, to wash over, to swab in the different zones, or to shut off the bottom horizon.

The retainer production packer, continuous double-seal type, is illustrated. It is run into the hole on a setting tool attached to the bottom of a running-in string, usually consisting of tubing, made up with an expansion joint a few feet above the setting tool. The packer is run to its predetermined position in the well, where it is tripped and set to seal off against the liner or casing with an oil-resisting packing rubber between two lead seals. It is prevented from moving either up or down the pipe by two sets of slips.

In setting the packer a tripping ball, dropped into the running-in string, falls to its seat in the setting tool. Hydraulic pressure then is applied to the packing member through fluid ports in the setting tool and thence through fluid ports in the body of the packer. This pressure elongates the packing and causes it to move upward until it shears the screws holding the upper set of slips. The running-in string then is picked up to set the upper slips, which prevent upward movement of the packer.

The strain thus imposed causes the body of the packer to slide upward until stopped by the packing unit being completely expanded against the liner or casing. This movement also shears the screws holding the lower slips and forces them against the pipe to prevent downward movement of the packer. With the packer thus anchored, the running-in string is rotated to the right to unscrew the setting tool, which then is pulled out of the hole.

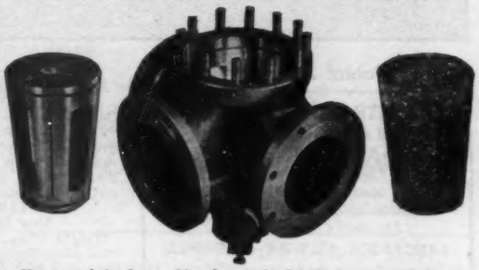
Everett Completes 50th Year

Edward Everett, general manager for Tubbs Cordage Co., San Francisco, Calif., has completed his fiftieth year with that company. Mr. Everett joined the sales staff of the Tubbs company on April 1, 1890, and one of his first assignments was the coverage of newly developed fields in California. A few years later he worked in the oil fields of the Mid-Continent so that he has a very wide acquaintance in the industry. In a comparatively few years he was recalled from the field and appointed general manager, with headquarters in San Francisco.

In recognition of his important part in the development and standardization of oil-field cordage he became one of the pioneer members of the A.P.I. committee on specifications for oil-field rope and for nearly half a century has been recognized as one of the country's outstanding authorities in this field. Among his hobbies, Mr. Everett still maintains his love of fishing. At one time, he was one of the champion dry-fly casters of the United States, and even yet can lure the most wary trout to his creel.

Resistance to Abrasion Increased By Merchrome Coating

After more than 2 years of factory and field testing, a new valve application known as Merchrome coating has been developed by Merco Nordstrom Valve Co. It permits a lubricating plug-cock valve to successfully handle services where the temperatures run as high as 1,000° F. and where, according to Nordstrom engineers, the operating conditions make the ordinary type of valve totally inadequate. While the use of Merchrome-coated valves is principally for refineries on hot-oil and vapor lines, such as cracking, coking, and topping units, and for mud lines to combat abrasion and erosion, the Merchrome application is expected to gain wide acceptance in chemical plants and in industries where stainless-steel valves have limitations.



View at left shows Merchromed plug before machining; center view, body; at right, plug after machining

The coating process is a development in which a welded coating is applied to the rotating surfaces of the plugs and bodies and in some cases other parts of the valves. This coating is a complex metal alloy of extreme hardness and corrosion resistant. Another invaluable characteristic of this coating is said to be its extremely low coefficient of friction. The hardness of Merchromed surfaces is approximately 54 on the Rockwell C scale and this alloy has the property of maintaining this hardness practically unimpaired at temperatures of 1,000° F. The corrosion resistance of the coating is approximately equal to that of the stainless steels and for this reason it makes an ideal solution of the problem of preventing the galling and scoring of the sliding surfaces of a stainless-steel plug cock without sacrificing its resistance to corrosion. The Merchrome is said to form an inseparable bond which may be applied in any thickness.

Another interesting development is included. For high-pressure service these valves are "hot-lapped." The plugs are lapped under heat into the bodies at the temperature corresponding to the service for which they are intended. This provides a means of securing an extremely accurate fit between the plugs and bodies at the operating temperature and insures extremely smooth operation. The valves are tested before shipment with hot oil at temperatures up to 600° F., and under a pressure equivalent to the intended operation pressure.

FRANKS MANUFACTURING DOUBLES CAPACITY OF PLANT

Climaxing 10 years of growth, enlargement of Franks Manufacturing Corp.'s plant in Tulsa has just recently been completed to double the capacity of the plant. A total of 180 men are now employed in the enlarged plant, as compared with the 70 men working before the expansion. Inset shows the remodeled office building, where increased space was provided for the engineering and office forces.

In 1930 the Franks Manufacturing Corp. was organized by H. H. Franks, president; and Carl White, Jr., vice president; then the owners of the company. Since that time the organization has pioneered in portable "slim hole" drilling units and the portable, 84-ft. telescoping servicing derrick, both of which are truck mounted and therefore greatly reduce rigging-up time.

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FOR SALE—Oil and Gas Lease covering 340 acres in Section 2, 3 and 9 Township 7 South, Range 5, Hamilton County Illinois, five-year lease $1.00 an acre rental. Write George W. Hogan, Jr., McLeansboro, Illinois.

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PETROLEUM Engineer: Young production engineer experienced in Mid-Continent desires position as engineer with reliable company or independent. Now employed but desires change. References. Box 670, The Oil and Gas Journal, Tulsa, Oklahoma.

OIL ACCOUNTANT, 17 years' experience drilling, production, refining, taxation, desires new connection with progressive firm. Address Box K-641, The Oil and Gas Journal, Tulsa, Okla.

CHEMICAL ENGINEER—Desires technical position in refinery. 8 years experience with major oil company in laboratory, technological dept. and plant operation including absorption, stabilization, polymerization and hydrogenation. Box K-700, The Oil and Gas Journal, Tulsa, Oklahoma.

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I OFFER for sale direct from owners royalties from select fields of the Southwest at very attractive prices. These properties range in price from $2,000.00 to $300,000.00, and will stand the most rigid investigation. If not interested in buying, please do not answer. No brokers need apply.
P. O. Box #501, Dallas, Texas.

Investment Wanted

MANUFACTURER or Sales organization to distribute exclusively, a new, radically different, drill bit proved 25% to 65% more efficient than the fish tail, in all formations and depths. Liberal terms. Kless, 414 Stratford St., Houston, Texas.

For Sale—Maps

R. B. ROBINSON MAPS
Jackson, Miss. 3-Hart Bldg., Across Street from Heidelberg Hotel. Ownership maps All Over Mississippi.

1940 OIL AND GAS FIELD MAP
Texas, Eastern New M. Price $1.00.
Wildcat Map $3.00 Published monthly.
ZINGERY OIL MAP CO., Fort Worth, Tex.

Mailing Lists

ROYALTY Owners, Oil Investors, Unit Holders, Stockholders in Oil, Royalty and Mining Companies. Personnel lists of every branch of oil industry. All by states. We buy or swap lists. Oil Industry Mailing List Co., Tulsa Loan Bldg., Tulsa, Okla

Survey Service

REMEMBER EAST TEXAS
When all other methods fail, employ my divining or dowsing method. If oil exists this method finds it. Faults, broken treacherous areas accurately defined. Our Watson #2, first producer Wilmington, Calif. field, located by this method. More reliable than mechanical geophysics. Ask any unbiased oil authority. Many years' experience. A wise man investigates. George Miller, 1548 Post, Torrance, California.

Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

CLASSIFIED ADVERTISING RATES

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgment is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times
3 Lines	$1.05	$1.80	$2.55	$3.30
4 Lines	1.40	2.40	3.40	4.40
5 Lines	1.75	3.00	4.25	5.50
6 Lines	2.10	3.60	5.10	6.60
7 Lines	$2.45	$4.20	$5.95	$7.70
8 Lines	2.80	4.80	6.80	8.80
9 Lines	3.15	5.40	7.65	9.90
10 Lines	3.50	6.00	8.50	11.00

CLASSIFIED DISPLAY RATES

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1 Inch	1 time	$5.00
1 Inch	13 times	4.50 per inch
1 Inch	26 times	4.00 per inch
1 Inch	52 times	3.50 per inch

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

Geophysical Service

HOMER L. FITCH, GEOPHYSICIST AND LOCATION ENGINEER

WHY drill dry holes? Our method only locates structures which contain oil or gas. Locations made by us will produce or no pay. Drawer 711, Brownsville, Texas.

Equipment Wanted

WANT to buy 3 to 5 thousand feet good used 3-inch drill pipe. Must be good. Will pay cash. H. E. Young, 204 Grand Theatre Bldg., Centralia, Ill.

WANTED used compressor for natural gas. Jas. W. Knight, 1965 Penobscot Building, Detroit, Michigan.

50 to 60 HP. GAS engine with or without butane carburetor. Must be late type, guaranteed good condition. Jos. Greenspon's Son Pipe Corp., National Stock Yards, St. Clair County, Illinois.

For Sale—Equipment

ALMOST-NEW Power-Equipped Guffey "45" Portable Draw Works. 150 H.P. WOKU Waukesha Engine. Received as trade-in on larger unit. Used on 11 wells. Thoroughly checked, gone over. New guarantee. On display our Okla. City plant. Offered at a big saving! JONES, SHELBURNE & GUFFEY, Inc., Petroleum Bldg., Okla. City, Oklahoma. Phone 2-4153.

FOR SALE

One gasoline drilling rig with two 85 H.P. Waukesha motors and unitized draw works complete.

10,000 Ft. 2½" seamless tubing, used in flowing wells only.

10,000 Ft. 7" O.D. 26# seamless casing, once run.

15,000 Ft. 4½" O.D. seamless drill pipe equipped with both regular and full hole tool joints.

In addition to the above we have 20,000 Ft. screw line pipe in Oklahoma; also drilling rig capable of drilling to 6500 feet, complete stock of line pipe, casing, drilling and pumping equipment.

Wire, Write or Phone for Prices.

Louisiana Iron & Supply Co.
Shreveport, La.

For Sale—Equipment

For Sale—Equipment

For Sale—Equipment

LIQUIDATING BARNSDALL REFINERY—OKMULGEE, OKLAHOMA

Will Sell All or Any Part
Prices Quoted Where Located or f.o.b. Cars
—Send us your Inquiries—

New, Complete Inventory Will Be Available Immediately

Send Us Your Name and Address

SONKEN-GALAMBA SUPPLY COMPANY

W. C. Berry and H. J. Galamba
Riverview at Second, Kansas City, Kansas

Robt. W. Duden
2100 S. Union, Tulsa, Oklahoma

FOR SALE: 7 ft. x 20 ft. Butane welded storage tanks 125# WP, capacity 6000 gallons. I.T.I.O. Co., Bartlesville, Okla.

25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.
Terms to suit.
CINCINNATI MACHINERY & SUPPLY CO.
26 West 2nd St., Cincinnati, Ohio

FOR SALE: At Oklahoma City, 1 Muskogee Model "B" skid type well service machine with PA-100 International Motor. I. T. I. O. Company, Bartlesville, Okla.

4,000' of 8¼"—32 lb. lapweld casing.
3,200' of 7"—24 lb. lapweld casing.
1,100' of 4"—16.60 lb. seamless drill pipe.
P. O. Box 1360. Phone 312. Seminole, Okla.

FOR SALE—Refinery in Central Kansas. Well established, doing good business as books will show. Entering other business. Box 222, Chase, Kansas.

BRAND New Engines—Hercules 4 cylinder, model OOC and IXB; 1 6x6 single cylinder Gardner-Denver air compressor; 1 No. 2 Cincinnati milling machine; 1 2-cylinder Le Roi engine, used; 1 4-cylinder Fuller & Johnson engine with power take-off; 1 new Westinghouse 10-h.p. electric motor, 220-volt, ball bearing. Dan's Spring Works, 1810 Cherry, Kansas City, Mo.

35,000' 10"—32# P.E. seamless line pipe
45,000' 10"—41# P.E. lapweld line pipe
All beveled for welding
6,000' 10"—short collar 40# casing
6,000' 10"—long collar 40# casing
8,600' 4"—11# 10-thd. suitable to run in 3,000' strings, or use for line pipe

ALL THE ABOVE LISTED PIPE IS STRICTLY #1 AND READY TO GO

CENTURY PIPE & SUPPLY COMPANY
900 N. MAIN ST., FORT WORTH, TEX.
Phone 6-2713

FOR SALE
Following used lapweld casing:
475'—15½"—70#
1625'—12½"—50#
2350'—10" —40#
2000'— 8¼"—32#
4000'— 5⅝"—17#
All of above casing in good condition
Also have for sale 1—45C Star and 1—49C Star Drilling machines in exceptionally good condition, completely equipped.
NO DEALERS
Bryan Petroleum Corporation
410 Beacon Bldg., Tulsa, Okla.

THREE THOUSAND BARREL REFINERY for sale, over sixty thousand barrels storage, about six miles four inch pipeline. Write TOWER REFINING CO., 612 Santa Fe Bldg., Dallas.

FOR SALE: Star #28 beam steam machine lines and tools complete. Box 592, Emporia, Kansas.

916 C.F.M. Ingersoll Rand XRB 14" x 14" x 14" Tandem Duplex Compressor 50# Pressure with 100 HP GE 2200 Volt Motor Oil Switch and Starter Completely Assembled on Structural Steel Frame. Absolutely first-class condition and in operation. $1500.00 FOB Houston. Banks Moreland Company, W-61763, P.O. Box 1764, Houston.

TRACTORS
Caterpillars, crawler type, size "35," $375; size "65" with nigger-head winch $750; Caterpillar RD8 with bulldozer $2000; Allis-Chalmers Model L with bulldozer $1750. Guaranteed, slightly used. O. C. Evans, Mt. Sterling, Ky.

FOR SALE
Good as new Cardwell "H" Spudder with steel subsurface and telescope mast. Complete drilling-in outfit including tools and cordage. Now at work with excellent crew in Illinois. A $10,000 outfit for sale at $7,500. Terms can be arranged.
Address Box K-701
The Oil and Gas Journal, Tulsa, Okla.

FOR SALE 2500' of 4½" O.D. 30 ft. joints, 16.6# per ft., Hughes Acme full hole tool joint drill pipe; or will exchange for 30' ft. full hole 3" (3½" O.D.) drill pipe. Adkisson & Company, 2019 W. T. Waggoner Building, Fort Worth, Texas.

STORAGE tanks, pumps, compressors, Griscom-Russell bentube sections, condensers, stills, portable steel buildings, pipe and fittings direct from gasoline plants now being dismantled. Box K-677, The Oil and Gas Journal, Tulsa, Oklahoma.

PHONE: CENTRAL 8025 LONG DISTANCE PHONE: 266

JOSEPH KESL RENTAL EQUIPMENT CO.

We Rent Construction Equipment of All Kinds

Write, wire or phone regardless of location of work.

430 WITHERS AVENUE ST. LOUIS, MISSOURI

Write, wire or phone regardless of large or small requirements.

New York Markets

(Continued from Page 103)

some exports of lubricating oils are being made is given in the report of clearances from New York Harbor during the past week. Three ships, each bound for Europe, carried 8,000 bu. of wheat and 190 bbl. of lubricating oils; 12,000 sacks of flour and 151 bbl. of lubricating oils; 40,000 bu. of wheat and 20 bbl. of lubricating oils.

The weakened lubricating-oil market was offset to some degree by the strong gasoline structure in the Pennsylvania area. It was reported that one of the comparatively large refiners was unable to meet commitments and was in the market for a substantial quantity of gasoline. Prices in the Pennsylvania area were reported ranging from 5¾ cents on 72-73 octane to 6¼ cents on 74-76 octane with prospects of an increase if present demand holds.

Gulf Coast Markets

(Continued from Page 103)

the market has continued inactive. Light fuels and burning oils also showed further weakness, although there were no important revisions in prevailing quotations for the respective products. Lubricating oils also still appear to be in fair shape despite the lack of new business. Suppliers report that contract movement has been sufficient to prevent any substantial backing up of stocks.

CRUDE-OIL PRICES IN REPRESENTATIVE FIELDS

Complete crude-price schedules are now being published in the first issue of each month. The last complete schedule was published in the July 4 issue. All changes in crude-oil-price schedules will be published completely in the first issues following the announcement of the changes. Following are representative crude-price schedules in barrels (42 gal.):

East Texas	$1.10
Conroe	1.27
Tepetate, Louisiana	1.03
Smackover, Arkansas, heavy	.73
Illinois basin	1.05
Pecos County, Texas	.78
Lance Creek, Wyoming	.77
Bradford, Pennsylvania	2.25

Gravity Schedules

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

	Signal Hill, California*	Oklahoma, Kansas	Gulf Const, Texas
14-14.9	$0.65	....	....
15-15.9	.65	....	....
16-16.9	.65	....	....
17-17.9	.65	....	....
18-18.9	.65	....	....
19-19.9	.69	....	$0.86
20-20.9	.73	$0.70	.88
21-21.9	.78	.72	.90
22-22.9	.82	.74	.92
23-23.9	.86	.76	.94
24-24.9	.90	.78	.96
25-25.9	.95	.80	.98
26-26.9	.99	.82	1.00
27-27.9	1.03	.84	1.02
28-28.9	1.07	.86	1.04
29-29.9	1.10	.88	1.06
30-30.9	1.14	.90	1.08
31-31.9	....	.92	1.10
32-32.9	....	.94	1.12
33-33.9	....	.96	1.14
34-34.9	....	.98	1.16
35-35.9	....	1.00	1.18
36-36.9	....	1.02	1.20
37-37.9	....	1.04	1.22
38-38.9	....	1.06	1.24
39-39.9	....	1.08	1.26
40-40.9	....	1.10	1.28

*Effective Feb. 1, 1940.

Crude-Oil Prices

All prices of Pennsylvania Grade crude oil were reduced 25 cents per barrel effective July 12. New prices are Bradford $2, Southwest Pennsylvania $1.65, Eureka $1.59, Buckeye $1.55, Group A-E $1.93-88.

The Amsco Pipe Line Co. effective July 10 lowered the price of La Rosa pool crude in the Refugio district of Southwest Texas 25 cents a barrel. Its action makes a top of $1.08 a barrel and 66 cents for below 20 gravity, and with a 2-cent-a-barrel differential.

Panhandle Refining Co. of Wichita Falls, Tex., effective 7 a.m. Tuesday, July 16, posted a flat price of 75 cents per barrel for crude in Archer, Clay and Wichita counties, North Texas. Under the old schedule the company was paying $1.03 for 40 gravity and above with a 2-cent differential down to 79 cents for 29 gravity and below.

Rock Island Refining Co. of Duncan, Okla., announced that effective 7 a.m., July 16, it would pay a flat price of 60 cents per barrel for crude from the Tussy field of southern Oklahoma. The previous price scale was 60 cents for 20 gravity and below, with a 3-cent differential up to 75 cents for 24 gravity.

Sinclair Prairie Oil Marketing Co., effective 7 a.m. July 16, reduced its postings in Mexia and North Central Texas to a flat 75 cents per barrel.

Index to Advertisers

A

Abercrombie Pump Co. 86
AC Spark Plug Division of General Motors Corporation .....
Acme Fishing Tool Co. .....
Air Reduction Sales Co. .....
Ajax Iron Works .....
Alco Products Division of American Locomotive Company .....
Allis-Chalmers Mfg. Co. .....
Allison, R. J. 80
American Blower Corporation ....
American Bosch Corporation ....
American Cable Division of American Chain & Cable Co., Inc.
American Cast Iron Pipe Company
American Hoist & Derrick Co. ...
American Iron & Machine Works
American Locomotive Company, Diesel Engine Division .....
American Meter Company 8
American Roller Bearing Co. .....
American Rolling Mill Co., The ..
American Steel & Wire Company
Armstrong Bros. Tool Co. 88
Armstrong Machine Works 74
Ashcroft Gauge Division .....
Athey Truss Wheel Co. .....
Atlas Supply Co. .....
Auer, C. L., and W. W. 88
Austin-Western Road Machinery.
Axelson Manufacturing Company

B

Baash-Ross Tool Company .....
Babcock & Wilcox Tube Company, The .....
Badger & Sons Co., E. B. 70
Baker Oil Tools, Inc. 60
Baldwin-Duckworth Division of Chain Belt Company .....
Bantam Bearings Corp. 4
Baroid Sales Division, National Lead Company .....
Barret, William M., Inc. .....
Bethlehem Supply Company .....
Bethlehem Steel Co. 1
Braden Steel Corporation .....
Bradford Motor Works, Inc. .....
Brance-Krachy Co., Inc. .....
Brauer Machine & Supply Company 81
Brewster Company, The .....
Bridgeport Machine Company, The
Bristol Company, The .....
Broderick & Bascom Rope Co. ....
Brown Instrument Company, The
Bruning, Charles, Co., Inc. .....
Buckeye Traction Ditcher Co. ....
Buda Co., The 3
Burgess Battery Co. 88
Butler Manufacturing Co. .....
Byron Jackson Co. .....

C

Cable, Jo H. .....
Cameron Iron Works, Inc. .....
Cardwell Mfg. Co., Inc. .....
Carey Company, The Philip .....
Carnegie-Illinois Steel Corporation
Cast Iron Pipe Research Association, The .....
Caterpillar Tractor Co. 44-45
Cavins Company .....
Century Electric Company .....
Cessna Aircraft Company .....
Chain Belt Company .....
Chaplin-Fulton Mfg. Co., The ....
Chapman Valve Mfg. Co., The ....
Chemical Process Co., Inc., The .. 91
Chevrolet Motor Division, General Motors Sales Corporation .....
Chicago Bridge & Iron Company.
Chiksan Tool Co. .....
Clark Brothers Company 110-111
Classified Advertising .....
Cleveland Trencher Company ....
Climax Molybdenum Company ...
Columbia Steel Company .....
Columbian Steel Tank Co. .....
Continental National Bank of Fort Worth .....
Continental Oil Co. .....
Continental Motors Corp. .....
Continental Supply Company, The 47
Cooper, Fred E. 52
Cooper-Bessemer Corp., The .....
Core Laboratories, Inc. .....
Crane Co. .....
Curtin, W. H., & Co., The .....

D

Darling Valve & Mfg. Co. .....
Davis Regulator Co. .....
Dayton Rubber Mfg. Co., The ....
Dearborn Chemical Co. 74
Dempsey-Wilson Construction Co.
Diamond Chain & Mfg. Co. .....
Diesel Power & Machinery Co. ..
Dodge Division, Chrysler Corporation .....
Donovan Boiler Works .....
Dowell Incorporated .....
Dragon Mfg. Co., The .....
Dresser Mfg. Co., The .....
Drilling Equipment Directory ... 48
Duff-Norton Manufacturing Co., The .....
Du Pont de Nemours & Co., Inc.

E

Eagle-Picher Lead Co. .....
Eastman Oil Well Survey Co. ....
Economy Electric Lantern Co. ....
Elastic Stop Nut Corp. 80
Emsco Asbestos Company .....
Emsco Derrick & Equipment Company .....
Enardo Foundry & Mfg. Co. .....
Ensign Carburetor Company, Ltd.
Ethyl Gasoline Corporation .....

F

Filtrol Corp. .....
First National Bank of Fort Worth
First National Bank in Houston..
First National Bank & Trust Co. of Tulsa, The .....
Fisher Governor Company .....
Fluid Packed Pump Co. .....
Fluor Corporation, Ltd., The ....
Ford Motor Co. .....
Fort Worth Chamber of Commerce
Fort Worth Clearing House Association .....
Fort Worth National Bank, The..
Foster Wheeler Corp. .....
Four Wheel Drive Auto Company
Foxboro Co., The .....
Franks Machine Co. .....
Frick-Reid Supply Corporation ...

G

Gardner-Denver Company .....
Garlock Packing Company, The ..
Gaso Pump & Burner Mfg. Co. ..
Gasoline Products Co., The .....
Gates Rubber Co., The 56
Gatke Corporation .....
General American Transportation Corporation—Terminal Division
General Electric Company .....
General Paint Corporation .....
General Power, Inc. .....
Geological Scientific Service Company, Inc. .....
Geophysical Service, Inc. .....
Inside Back Cover
Gilmer Company, L. H. .....
Girdler Corporation, The .....
Goodall Rubber Co. .....
Goodrich Company, B. F., The ...
Goodyear Tire & Rubber Co. ....
Gott, H. P., Mfg. Co. .....
Graver Tank & Mfg. Co., Inc. ... 67
Gray Processes Corporation, The
Great Lakes Steel Corporation .. 6-7
Green Head Bit & Supply Co. ....
Greenspon's Son Corp., Jos. .....
Guiberson Corporation .....
Gulf Oil Corp. .....
Gulf States Utilities Co. .....

H

Halliburton Oil Well Cementing Co. .....Inside Front Cover
Hanlon-Buchanan, Inc. 10
Harnischfeger Corporation .....
Harrisburg Steel Corporation ...
Hazard Wire Rope Division of American Chain & Cable Co., Inc. .....
Hewitt Rubber Corp. 51
Hill-Hubbell & Co. .....
Hoard Exploration Co. .....
Houston Engineers, Inc. 81
Houston Pipe Appliance Co. .....
Houston Pipe Line Co. .....
Hughes Tool Co. ..... Back Cover
Humble Oil & Refining Co. .....
Hydril Co. .....

I

Independent Exploration Company .....
Inferno Co., The 62
Ingersoll-Rand Co. .....
International Geophysics, Inc. ...
International Harvester Co. .....
International Nickel Company, Inc. The .....

J

Jadson Motor Products Company 87
Jarecki Manufacturing Company 77
Jeffrey Manufacturing Company.
Jensen Brothers Manufacturing Co. .....
Jerguson Gage & Valve Co. .....
Johns-Manville Corporation 86
Jones Company, The S. M. .....
Jones & Laughlin Steel Corporation .....

K

Kellogg, M. W., Company, The .. 42
Kennedy Valve Mfg. Co., The ....
Kerotest Manufacturing Company
Keuffel & Esser Co. 78
Key Company .....
Kobe, Incorporated .....

L

Laminated Shim Company, Inc... 80
Landis Machine Company, Inc. ..
Lane-Wells Co., The .....
LaPlant-Choate Manufacturing Co. Inc. .....
Larkin Packer Company, Inc. ....
Layne and Bowler Co., The .....
Layne & Bowler, Inc. .....
Leeds & Northrup Co. .....
Le Roi Company .....
Lennox Hotel .....
Leschen, A., Sons Rope Co. .....
Lincoln Electric Company, The ..
Line Scale Co., Inc. .....
Link-Belt Company .....
Lockheed Aircraft Corporation ..
Lone Star Cement Corporation ..
Lucey Export Corporation .....
Ludlow Valve Mfg. Co., The .....
Lufkin Foundry & Machine Co. ..
Lufkin Rule Co. .....
Lummus Co., The .....
Lunkenheimer Co., The .....

Mc

McEvoy Company .....
McGregor Working Barrel Company .....
McKissick Products Corp. .....

M

MacClatchie Manufacturing Company .....
Macwhyte Co. .....
Magnolia Airco Gas Products Co.
Maloney Tank Mfg. Co. ..Front Cover
Manhattan Rubber Mfg. Division
Manning, Maxwell and Moore, Inc. 74
Marley Company, The .....
Marmon-Herrington Co., Inc. ....
Marsh, James P., Corp. .....
Martin, John N., Mfgr. .....
Martin-Decker Corp. .....
Mayfair Hotel 88
Medart Company .....
Meehanite Research Institute ....
Merco Centrifugal Co. .....
Merco Nordstrom Valve Co. 40A-40B
Mercoid Corporation .....
Metric Metal Works 8
Mid-Continent Engineering Co., Inc. .....
Mid-Continent Supply Company ...
Midwest Piping & Supply Company, Inc., The .....
Miller Sand Pump Co. .....
Minneapolis-Moline Power Implement Company .....
Mission Mfg. Co., The 55
Monsanto Chemical Company ....
Morse Chain Company .....
Murray Rubber Company .....

N

National Bank of Tulsa .....
National Carbon Co., Inc. .....
National Steel Corporation 6-7
National Supply Co., The .....
National Transit Pump & Machine Co. .....
National Tube Co. .....
Naylor Pipe Company .....
Nelson, J. B. .....
New Bedford Cordage Co. 80
New Deal Specialty Co., The .....
Newman, Hender & Co., Ltd. ....
Non-Corrosive Products Company
Norton Company .....
Novo Engine Co. 84
Nugent, Wm., & Co., Inc. .....

O

O.C.S. Mfg. Co., The .....
Ohio Injector Co., The .....
Oil Center Tool Co. .....
Oil Well Supply Company .....
Oliver United Filters, Inc. .....
Osage Metal Company 81
Otis Pressure Control, Inc. .....

P

Page Fence Association .....
Page Steel & Wire Division of American Chain & Cable Co. ....
Parkersburg Rig & Reel Co. 39
Parkhill-Wade .....
Patterson-Ballagh Corporation .. 97
Pease, C. F., Company, The .....
Peerless Pump Division of Food Machinery Corp. 80
Penberthy Injector Co. .....
Pennsylvania Grade Crude Oil Association .....
Perco, Inc. .....
Perfex Corporation .....
Petroleum Advisers, Inc. .....
Petroleum Electric Power Association .....
Petroleum Rectifying Company ..
Phelps Dodge Refining Corporation .....
Pittsburgh-Des Moines Steel Company .....
Pittsburgh Equitable Meter Co. ..
Pittsburgh Steel Company 72
Plymouth Cordage Co. .....
Powell, Wm., Co., The .....
Price Co., H. C. .....
Pritchard, J. F., & Co. .....
Pure Oil Co. .....

R

Reading-Pratt & Cady Division of American Chain & Cable Co. .. 2
Rector Well Equipment Co., Inc... 81
Reda Pump Co. .....
Reed Roller Bit Company .....
Regan Forge & Engineering Co...
Reilly Tar & Chemical Corporation .....
Republic Rubber Division of Lee Rubber & Tire Corp. .....
Republic Steel Corporation 30
Rockford Drilling Machine Division of Borg-Warner Company
Roebling's Sons Company, John A. 61
Ryerson & Son, Inc., Joseph T... 87

S

Schlumberger Well Surveying Corporation .....
Security Engineering Co. .....
Seismic Explorations, Inc. .....
Seismograph Service Corp. .....
Shafer Bearing Corporation .....
Shand & Jurs Co. 68
Shell Oil Company, Incorporated
Sinclair Refining Company (Inc.)
Skinner Co., M. B. .....
Smith, A. O., Corporation .....
Smith Company, E. M. .....
Smith Company, Howard .....
Smith, H. C., Tool Co. 80
Smooth-On Mfg. Co., Inc. .....
Socony-Vacuum Oil Co., Inc. .....
South Chester Tube Co. .....
Southwestern Gas & Electric Company .....
Spang Chalfant, Inc. .....
Spang & Company .....
Sperry-Sun Well Surveying Co. ..
Spicer Mfg. Corp. .....
Standard Bag Mfg. Co. 80
Standco Brake Lining Co. 80
Stanley Belting Corporation 87
Star Drilling Machine Co., The ..
Stearns-Roger Manufacturing Co.
Steel Founders' Society .....

T

Taylor Forge & Pipe Works 60
Taylor Instrument Companies ...
Technical Oil Tool Corporation, Ltd. .....
Texaco Development Corporation
Thermoid Company 5
Thornhill-Craver Co., Inc. .....
Timken-Detroit Axle Co. .....
Timken Roller Bearing Company
Timken Roller Bearing Company, Steel and Tube Division .....
Tobin, Edgar, Aerial Surveys ...
Toledo Pipe Threading Machine Co., The .....
Trackson Company .....
Tretolite Company 27
Trinity Portland Cement Company
Tubbs Cordage Co. 81
Tube-Turns, Inc. .....
Tulsa Boiler & Machinery Co. ...
Tulsa Chamber of Commerce ....
Twin Disc Clutch Co. .....

U

Union Wire Rope Corporation .. 84
Unit Rig & Equipment Company.
United Geophysical Co. .....
United States Rubber Company ..
United States Steel Corp., Subsidiaries 25
United States Steel Export Company .....
Universal Atlas Cement Co. 25
Universal Exploration Co. .....
Universal Oil Products Co. 32

V

Vickers, Inc. .....
Victor Products Corp. .....
Viking Pump Co. .....
Visco Products Company .....
Vogt, Henry, Machine Co. .....

W

Wall-Colmonoy Corp. .....
Wall Rope Works, Inc. .....
Walworth Co. .....
Warren Petroleum Corporation..
Watson-Stillman Co., The .....
Waukesha Motor Co. 71
Wedge Protectors, Inc. .....
Well Equipment Manufacturing Corp. .....
Well Surveys, Inc. .....
Western Geophysical Company ..
Westinghouse Electric & Mfg. Co.
Wheeling Machine Products Company .....
Whitney Chain & Mfg. Co., The ..
Wickwire Spencer Steel Company
Wilson Manufacturing Co., Inc...
Wisconsin Motor Corporation ...
Witte Engine Works .....
W-K-M Company, Inc. .....
Worthington Pump & Machinery Corporation .....
Wyatt Metal & Boiler Works ....

Y

Young Engine Corp. .....
Youngstown Sheet & Tube Co. ..

The Oil Man's Calendar appears on Page 31